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THE ETHNOLOGY OF MALTA AND GOZO.

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[The figures in brackets in the text refer to Appendix I, Literature.]

I.—Introduction.

This report refers to a part of the material collected in December, 1920, and January, 1921, by an anthropological expedition from Oxford. The expedition was made possible by the generosity of Sir Alfred Mond and a grant from the Mary Ewart Trust. Most of the measurements on crania, on the women, and on about a hundred men and women at Gozo, were done by Mrs. Jenkinson and Miss Moss working together. Miss Russell measured long bones and about half the children.[1] The remaining measurements were done by the present writer. As far as possible all the skeletal material was examined by the present writer, who is ultimately responsible for the sexing. Mr. Hort was occupied in working at the archæological problems. I am indebted to Mrs. Jenkinson and Miss Moss for working out a number of indices on the living, and to Miss Russell for help in tabulation.

We all wish to express our thanks to the Governor of Malta (Field-Marshal Lord Plumer), who gave us official support, took a great personal interest in our work, and smoothed away many of the difficulties; and to the Lieutenant-Governor, Mr. Robertson. Dr. Zammit, the Rector of Malta University and Curator of the Museum, set his unrivalled knowledge of the island at our disposal, and gave us every possible help. Our thanks are also due to various members of the Department of Public Health, who sacrificed busy days in order to take us into villages where they happened to be known; to Count Caruana Gatto, for instructing me in the botany of Malta; and to numerous other friends who did everything in their power to enable us to collect data in Malta.

[1] It is hoped to utilise the material dealing with the long bones and with the children in subsequent papers.

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In Oxford, Professor Arthur Thomson has set the resources of his Department, including a calculating machine, at my disposal, and has helped me continually with advice and kindly criticism. My former teachers—Sir Arthur Evans, Mr. Henry Balfour, Mr. E. T. Leeds, and Professor J. L. Myres—have accorded me in many conversations the combined privileges of a colleague and a pupil. I fear that I have, albeit unwittingly, often pirated their ideas. My colleague, Miss Blackwood, has devoted the greater part of a Long Vacation to helping to finish and prepare this paper for the press before my leaving England, and has performed the laborious task of looking over proofs in my absence.

II.—Geography.

The Maltese archipelago consists of the islands of Malta, Gozo, Comino, Cominetto and Filfola. The two latter are uninhabited, and Comino is practically untenanted. We are therefore only concerned with the islands of Malta and Gozo.

Malta lies about 60 miles south of Sicily and 180 miles north of the African coast. Its maximum length is 18½ miles, its maximum breadth 8½ miles, and its area 95 square miles. Gozo is considerably smaller, and has an area of about 20 square miles.

Geologically, the islands are Late Eocene (3). The eastern and most thickly inhabited part of Malta consists of globigerina limestone, which overlies lower coralline limestone; in the western part these beds are covered with beds of greensand and blue clay or marl, over which lies the upper coralline limestone. The rock is everywhere extremely friable, and is perpetually disintegrating under the influence of wind and rain. Except in one or two places the soil is seldom more than a few inches deep.

The surrounding seas are warm and shallow; a rise of 50 fathoms would connect Malta and Sicily, and a rise of 200 fathoms would join North Africa and Europe and include Malta as a craggy bastion. The shallowest sea, however, lies more to the west. Malta should, therefore, be more correctly described as an outlying pier of an old land bridge rather than part of the land bridge itself. It seems probable that slow, tectonic movements are actually in progress to-day, and that the archipelago is sinking; but it is extremely unlikely that any men of whom we possess traces at present, with the doubtful exception of a few fragments from the Weid Dalam, came to Malta when it was still part of the mainland.

The island is tilted from south to north. The cliffs along the southern coast are high and precipitous, and some of the loftiest parts of the island are close to the shore.

The undercliff here forms a pleasant contrast to the less fertile parts of Malta. Carib trees are not uncommon, potatoes are cultivated on terraces, and the tiny fields are irrigated, as elsewhere in Malta, by little runlets conducted along channels

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made of open stone pipes. On the rocks, in January, there was a wild profusion of flowering heath, of a species akin to our heather (*Erica*). Where the water overflows, there are tiny reed beds, but always smaller and less luxuriant than those of the Eastern Mediterranean. In some places on these cliffs the charlock appears to have competed successfully with *Oxalis cernua*.

The north coast is generally more shelving. There are no mountains, but the whole surface is cut by deep ravines, which are for the most part dry, but which may contain as much as three feet of water during a spate; the mouths of some of these valleys form small fiords. The western part of the island, which contains the upper coralline beds, contrasts strongly with the eastern. The hills are higher, the valleys bigger and more rounded, and the country is less parched, owing to the underlying marls. The scenery of Gozo resembles that of Western Malta, but the cliffs are higher and grander, the fields are larger, and the country is greener.

Owing to the large population every foot of soil is precious, and the whole of Malta is parcelled out into innumerable tiny fields, some hardly more than a few yards square, each being separated from the next by a stone wall. Olives and caribs grow as elsewhere in the Mediterranean, but for the most part they are limited to the courses of the streams; oranges flourish where there is sufficient water to irrigate them, but in Malta one looks in vain for the abundant orange groves of Sicily, or the pleasant tangled hillsides of Northern Cyprus. The myrtle is almost absent, the numbers of wild myrtle bushes can nearly be counted on the fingers of a man's hands. The flora (4) generally is most akin to that of Sicily; 94 per cent. of the Maltese species are found in that island, 91 per cent. in Africa, and 90·5 per cent. in the Levant (5). There are three things which are predominant in all the scenery of Malta: stone walls, goats, and the yellow flowers of the virulent *Oxalis cernua*, which not even the goats will eat.

Owing to the small size of Malta and the nature of its surface, the weather is dominated by two factors—the sea and the direction of the wind. The mean annual temperature is 66·6° F., the mean annual rainfall is 21·6 inches, precipitation normally occurring on 81 days. The mean relative humidity for seven years is 79·1 per cent. The coldest month is February (mean temperature 52·9° F.); the hottest August (77·9° F.). During June and July practically no rain falls, and in August the mean is only 0·13 mm. (6).

In working out constants, I have divided the islands into two areas—Urban and Rural. This is the division in the census (31), and corresponds very closely to a marked difference in the conditions under which the population lives. The former includes the fortified towns and suburbs, Valletta, Floriana, Cottoneria, Senglea, Conspicua, Sliema, St. Julian, Pieta Misida, Hamrum, Birchircara, Curmi, Paula, Tarxien, Zabbar, Calcara and Rabato; the latter, the more isolated villages in the country.

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The fortified towns and suburbs, apart from Rabato, form a practically continuous inhabited area. The population, especially in the suburbs, is extremely overcrowded. The country villages are irregularly built along a series of winding lanes, which converge on an open space not infrequently situated in front of the village church. In a corner of such a *piazza* there is usually a café, and it is here that the majority of measurements of the country people were taken, very often as the men came out of Mass on Sunday. Some of the villages have orange gardens, wherever there is sufficient water to spare for irrigation purposes.

Although with modern means of transport it is possible to visit practically the whole island in one day, many of the villages are nearly endogamous, in spite of the absence of geographical boundaries. The men of one village will certainly not seek their wives from a neighbouring village. If they marry outside their own hamlet, it will probably be with a girl from the suburban area. Similarly, many of the town dwellers find wives among the daughters of the country folk. No such distinctions appear to hold in the urban districts. Communications within this latter area are good and cheap, and extensive use of them appears to be made by the whole population.

III.—History.

The ethnological history of the archipelago is not as yet very clear, and further evidence is badly needed. A very interesting cave, usually known as Ghar Dalam, has been excavated by Mr. Despott, to whom I am indebted for permission to examine his finds and his MS. notes. The valley (the Weid Dalam) in which this cave is situated, shows signs of three terraces. The earliest terrace is high above the present level of the stream, which runs on the level of the old second terrace, and the third terrace, on a still lower level, is in most places filled up by *débris*, brought down by the present stream or its immediate predecessor. The second terrace appears to belong to two different periods, as there are in places marks on the rock of undercutting by the swirling of a stream at two very different levels. The river which cut out these terraces must, at least in flood time, have contained a considerable volume of water. The modern stream is, however, even at the wettest time, hardly more than a series of disconnected pools. The Ghar Dalam cave belongs to the earlier part of the second terrace. It contained numerous sherds, mostly Bronze Age. By far the greater part of the cave, however, was filled up with a very large number of bones, the majority of which belonged to a species of pygmy hippopotamus. These bones, and even the teeth, show considerable evidence of attrition by water.

In this fossil bed Mr. Despott claims to have discovered the remains of Neandertal man. All the human remains that have been found consist of very small fragments, and apart from one tooth, there is no evidence to show that these bones really belong to Neandertal man. The tooth is a molar exhibiting unusual characters, but in the absence of X-ray photographs or a section, and comparison with

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114 172 authenticated material, it is hardly possible to state definitely that Neandertal man was living in Malta at the time when the rivers were large and the pygmy hippopotamus abundant. It is further remarkable that in a deposit which appears to be admirably suited for the preservation of bones, only small fragments of man have been found. In such a dry climate as that of Malta, cracks may have occurred in the floor of a cave, down which tiny fragments of bones may easily have fallen. There are some gravel terraces in the neighbourhood of Zebbug, which should certainly be explored for traces of Palæolithic man in the island.

172 The peculiar form of the Maltese sanctuaries has been discussed with great wealth of detail by Professor Zammit, with special reference to the site at Hal Tarxien. He is inclined to believe that they belong to the Neolithic period. There is certainly an entire absence of metal in the "Neolithic" stratum, and the stone masonry has not been worked with metal tools. The development of pottery, however, suggests a Late Neolithic or even an Eneolithic stage, not improbably of comparatively late date. There is considerable evidence to suggest that the buildings were extremely holy places, and there are numerous parallel examples from other parts of the Mediterranean which indicate that under certain conditions metal, or at a later date iron, was tabu in particular sanctuaries. We know nothing at present about the domestic culture of these megalith builders, and it is unsafe to argue from their sanctuaries that they were unacquainted with the use of bronze. The period may be provisionally termed "Malta Local Neolithic."

Although the majority of the material found at Hal Saflieni[1] is Neolithic, a number of undoubtedly Bronze Age wares of coarse types, and fragments of large vessels similar to the cremation urns of the Hal Tarxien Bronze Age period were found there. In spite of the very large number of bones which I examined, however, I did not find any definite traces of cremation; and with such evidence as I possess at present, I think it is justifiable to conclude that we are dealing with material anterior to the Bronze Age at Hal Tarxien, i.e. belonging to the Malta Local Neolithic period. Some bodies were undoubtedly buried *in situ*, but the majority appear to have been brought there, possibly from various parts of the island; probably they were exhumed and stored in the Hypogæum. The fractures on many of the bones and the comparative absence of complete long bones, suggests exhumation, a practice still widely distributed in the Mediterranean.

The very close resemblance between the incised "Neolithic" ware from Hal Tarxien and that from Santa Verna in Gozo, suggests that at this time there must

[1] The Hypogæum at Hal Saflieni consists of a series of artificial caves hollowed out underground. In addition to numerous small objects, statuettes and sherds, these caves contained a very large number of human bones. The carvings, which are dolmenic in form, and the spirals in red ochre on the roof, have inclined Professor Zammit to believe that this is a sanctuary. Whatever its true purpose, the Hypogæum certainly forms an extensive ossuary of "Malta Local Neolithic" material.

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have been considerable intercommunication at least between these two places and admits the possibility of some of the bones in the Hypogæum coming from a distance. 172

A careful examination was made of the bones found in the Neolithic stratum at Hal Tarxien. These were all, as far as could be made out, those of domestic animals, the ox and the sheep predominating.[1] A number were either calcined, or had the semi-calcined appearance of bones which had formed part of a roast joint. It seems reasonable to follow Professor Zammit's suggestion that a number of these bones were those of sacrificial animals. No trace of human bones was discovered in the stratum of this period at Hal Tarxien. The very big dust deposit which occurs on top of the Neolithic stratum suggests a rather dryer climate than occurs at present. If the climatic conditions had been similar throughout the ages, there appears to be no reason why such a deposit should not also have occurred at other times. Without laying undue stress on what must necessarily be a hazardous hypothesis, there are slight indications from osteological evidence, as we shall hope to show later, that there was a difference in climate at the time when Hal Tarxien was built and modern days.

The ground plan of Hal Tarxien and the other sanctuaries remains to be explained. Speaking generally, each sanctuary may be described as a series of three consecutive apses growing successively smaller. At the end of the third apse, in what appears to have been the holy place, there is usually a small dolmen-shaped cist, sometimes with a hole on top and in front. In such cists large numbers of animal bones have been found. It is suggested by Professor Myres that such a plan is the final outcome of the *allée couverte*.

The general dolmen-like features of a number of the recesses of some of the sanctuaries, and of the stonework in the Hypogæum at Hal Saflieni, together with the terra-cotta objects which have been found, suggest that the megalith builders were familiar with dolmens, of which there are examples in the island; and it seems just possible that in Maltese soil the structure, which elsewhere developed into the most elaborate form of chambered barrow, may have become the three-apsed shrine. It must be remembered that it would be impossible in Malta to build any form of barrow, owing to the absence of surface soil.

It is interesting to note that except for certain differences in the form of the nose, the people that we associate with the dolmen culture in Western Europe closely resemble the people buried in the Hypogæum at Hal Saflieni.

The human remains of Bronze Age date are unfortunately scanty, and are limited to calcined fragments from Hal Tarxien. The finds at Bahria, a site which has not yet been properly excavated, suggest a settlement of foreign immigrants to a place which, as the name implies, is one of the few spots in that part of the island where the sea is easy of access. This may have been the first introduction

[1] Some dogs' bones were found, possibly of doubtful antiquity.

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of metals to the island. Bronze Age pottery is less highly finished than the Neolithic ware, but although the two are certainly distinct, there are transitional forms.

From an ethnological point of view it would appear that the Bronze Age, or the end of the Neolithic Age, was in many places a crucial period. It is difficult, however, to parallel this in Malta by linking up the osteological and the archæological material. As we shall hope to show later, the Megalithic people in Malta appear to be very distinct from the later inhabitants, and to present certain Armenoid characteristics. Sir Arthur Evans[1] has pointed out that there was a western colonial movement from the mainland of Greece towards the close of the period which he has termed Late Minoan III. There is evidence of such a movement in cemeteries near Syracuse. Up to the present, however, there is no evidence of Malta being connected with the East at so early a date. It has further been suggested that at some period in the early history of the island a complete destruction of the old population took place.

The sherds from Kallilia appear to be similar in fabric and design to those of the Hal Tarxien Bronze Age. During the so-called "Phœnician" period we have cultural evidence of connection with the Ægean and North Africa, and it would appear that then, if not earlier, the final shaping of the present population was taking place, and that the mixed "island people" of the Eastern Mediterranean were sufficiently firmly established to swamp any further immigration of invaders belonging to a pure Mediterranean strain.

The Punic influence, though culturally no doubt of importance, does not seem to have altered the population physically, and though at this time the connection with North Africa was undoubtedly close, it was not sufficiently strong to counteract the change wrought by the sea rovers from the islands, and to restore a type similar to that of Neolithic times.

Until the Roman occupation at the end of the third century B.C. Malta appears to have been closely connected with North Africa. Rome held the islands as a military or semi-military outpost until nearly the end of the second century A.D. The period usually known as "Roman" in Malta should be more correctly described as Romano-Maltese; although Rome was the ruling power and much Roman culture was introduced, there are few references to Malta in Roman literature, and from an ethnological point of view the island was certainly working out its own salvation.

The archipelago was given practical autonomy and made a municipium about A.D. 177. On the division of the Empire, in A.D. 395, the islands were taken over by the Eastern Empire, to which they were certainly ethnologically akin. Invasions of barbarians may possibly have occurred, but when the Arabs captured the islands in 870 they found a Byzantine garrison in occupation. Robert of Sicily, with a

[1] "Prehistoric Tombs of Cnossos," *Archæologia*, LIX, p. 107.

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small handful of Knights, took over Malta in 1090. The islands became part of the kingdom of Sicily, and shared its varying fortunes till they were ceded to the Knights of St. John by the Emperor Charles V in 1530.

For the next three centuries the history of the Knights is so intimately concerned with the history of Malta that we must at least briefly consider the general position of the Order.

The Knights Hospitallers of St. John of Jerusalem were finally ejected from the coast of Syria at the end of the thirteenth century. They occupied Rhodes in 1308. This island formed their home for over two hundred years. Early in 1523 they were driven from Rhodes, taking with them 4000 Rhodians. Given a temporary home at Viterbo by Pope Clement VII, a member of their own Order, they finally received the island of Malta from the Emperor Charles V under conditions of nominal feudal submission, to wit, the Grand Master to send a falcon to the Viceroy of Sicily every All Souls' Day.

The Order had an international character, and in the sixteenth century was divided into eight "Languages" or "Langues," according to the origin of the Knights, namely, Provence, Auvergne, France, Italy, Aragon, England, Germany and Castile. The English "Language" was suppressed in 1540, previous to which time many of the Knights who had been in England (the Grand Priory was situated in Clerkenwell) had either fled to Malta or been executed. The fiction of an English "Language" was, however, kept, and as late as 1782, on the foundation of a Bavarian "Language," this latter was united to the old English "Langue," which of course in reality no longer existed, and called the Anglo-Bavarian. The dominant element in the population of the Knights was certainly French, and the three French "Langues"—Provence, Auvergne and France—were certainly, both ethnologically and politically, the most important. The latter aspect was reflected in the great number of French Grand Masters.

For a generation after the occupation of the island by the Knights, Malta gradually succeeded in establishing an important position in the Mediterranean. There seems little doubt that men like Strozzi, La Vallette, Charles of Lorraine, and de Romegas were practically pirates, at least as far as their treatment of the Turk was concerned, and at this time a very large number of Turkish slaves, presumably chiefly of Negro origin, were introduced into the island. In 1564 Suliman the Magnificent decided to attack Malta. The story of the siege of Malta in 1565 is a magnificent passage in the history of this very distinguished Order of Chivalry. It only concerns us so far as it resulted in a reorganization of the fortifications of the island and the building of the great city of Valletta, called after the Grand Master of the Order, Jean Parisot de la Vallette. It is important for our purpose to remember that when the Turks were eventually driven from the island, the Order had only 600 men capable of bearing arms who had survived the struggle.

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175 169 34 The building of Valletta was begun by La Vallette and continued by subsequent Grand Masters. The majority of the labourers employed appear to have been slaves, although a certain number of men are said to have been imported from Sicily and Calabria. It is difficult to estimate how far an industrial population, which must have amounted to over 8000 men, can have affected the ethnology of the island.

175 161 361 It will be seen, then, that the population of the urban districts, including as it does such a very large proportion of the total inhabitants of the island, is comparatively new to its present surroundings. We have not got in Valletta, as we have in some parts of the Mediterranean, a town site which has been occupied more or less continuously since the dawn of history. We do not know, of course, what was the condition of Mount Sceberras before Valletta was built, but it certainly was not in any way an urban area, the old town having been what is now known as Citta Vecchia.

175 648 The subsequent history of the Order is not of great importance from the ethnological point of view. The Knights did not succeed in suppressing the Barbary corsairs, but carried on a number of sea-faring expeditions, especially in the Levant, although during the seventeenth century there were numerous sea battles between the Knights and the corsairs.

175 433 464 During the occupation of the Order, the food supply of Malta was imported from Sicily, and when diplomatic relations were strained between the Order and the King of Spain, shortage of food often became very marked. The relations between the Maltese and the Knights are difficult to sum up briefly. During the earlier days the privileges of the natives were only limited as far as military necessity, and, to a certain extent, financial obligations demanded. In later days the Maltese were employed as labourers, as soldiers, and as sailors, and although we find that in many cases the Grand Masters behaved generously to native women and children, the general record of the Knights, especially in the years before the final crash came, were unworthy of the ideals of an ascetic Order.

175 648 The Order ruled the island until the final break-up of the last relics of Mediæval Europe by Napoleon. The French garrison surrendered to the British in 1800, after holding the island for two years. Malta was formally ceded to the British crown in 1814.

IV.—DEMOGRAPHY.

161 174 It has been suggested that the large number of bones found in the Hypogæum is evidence of a large population in Neolithic times. The place is, however, probably an ossuary, and may have been in use over a long period. The earlier records are for the most part unreliable. In 870, 3000 Greeks are said to have been killed, and 3614 women and 5000 children sold into captivity. This suggests a large population. In 1530 Boisgelin's figure (23) is 15,000, but Miège (27) suggests a population of 29,659. After the attack of the Turks in 1566, the total is said to have dropped to 10,000. The emissary of Pope Gregory XIII reported the

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population as 20,000 in 1582. In 1632, 50,113 is given, and in 1667, 53,000. In 1741, 110,000 is the population, which is said to have increased to 114,000 in 1798. The figures for Malta and Gozo in 1826 are stated to be 119,736. But the first reliable figure is 115,945 in 1828. In 1881 the population was 132,129 in Malta and 17,653 in Gozo; in 1901, 184,742, and 1911, 211,564.

In regard to the proportion of the sexes there were in 1911 110 bachelors to 100 spinsters, 98 husbands to 100 wives, and 44 widowers to 100 widows. In round thousands, the males over 5 years of age were engaged in the following occupations[1]: 7 in professional, 2 domestic, 19 commercial, 12 agricultural, 21 industrial, and 31 were unproductive and unoccupied; the last figure is rather misleading as it includes at least four separate classes—children, aged, people of independent income, and incapables of all classes. The data in regard to foreigners is the most interesting for our purpose, as it gives an insight into the amount of mixture that is taking place. There were at the last census (1911) (31) 854 ♂ and 1,003 ♀ foreigners in the island.[1] Of these 3 ♀ were English, the remainder were made up as follows: 77 ♂ and 45 ♀ from Africa (apart from 1 ♂ and 2 ♀, all these came from Egypt, Tripoli, Tunis and Algeria); 479 ♂ and 499 ♀ from Sicily; 156 ♂ and 253 ♀ from other parts of Italy; 36 ♂ and 39 ♀ came from Greece, and 11 ♂ were classified as Asiatics. This does not, of course, include the garrison, a large floating population of which the figures are uncertain, as they depend so much on the ships which happen to be in harbour at the time when the census is taken. The increase of population between 1828 and 1911 is of interest. That of Malta increased by 88·25 per cent. of the total, and that of Gozo by 45·31 per cent. The increase in Malta was nearly five times as great in the suburban area as in the other areas combined.[1]

The density per square mile in 1911 was 1884 (Malta 2167, and Gozo 879). The density in the south-east corner of Malta is, however, greater than would appear from these figures. If the island be divided along a line west of Gargur, Naxaro, Musta, Notabile, Rabato, Crendi, the areas east and west of such a line would be almost equal in size. The eastern area, however, contained in 1911 183,132 inhabitants, and the western 5737. Practically all the Neolithic remains occur in the eastern area, suggesting that the centres of population have not changed appreciably since Neolithic times.

V.—Material and Methods.

The skelotal material examined is conveniently grouped in four series: (i) Bones from the Hypogæum at Hal Saflieni (Malta Local Neolithic); (ii) Miscellaneous ancient skeletons, chiefly Romano-Maltese; (iii) Specimens from the Chapel of Bones (Late Mediæval); (iv) Modern bones. Only in case (ii) were any complete skeletons available.

[1] Since this article was written the results of the Census of 1921 have become available. They are as follows:—Malta, 180,697 (92,127 ♂, 87,570 ♀); Gozo, 22,561 (10,618 ♂, 11,943 ♀). Total for the two islands, 212,258, an increase of only 694 since 1911, as against 26,822 in the previous decade.

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126 141 172 (i) The Hal Saflieni bones (whose antiquity we have already discussed) are in a very bad condition; few long bones are complete. After sorting through several tons of fragments, measurements were taken on such bones as were sufficiently well preserved. A number of astragali were brought to England for more detailed examination later. The Hal Saflieni crania, which had previously been examined by Bradley, were re-measured.

(ii) There are in the Museum of Valletta and in the Roman villa at Notabile a small series of ancient skulls and some complete skeletons, most of which were excavated by Dr. Zammit. These can be exactly dated by archæological evidence, but are unfortunately too few to warrant the drawing of any definite conclusions.

126 141 (iii) The Chapel of Bones is a large, fantastically arranged ossuary. It is alleged to contain the bones of patients dying in the hospital of the Knights of St. John, and probably dates from the seventeenth and eighteenth centuries. There are several remarkable features about these bones, first the number of aged persons represented, suggesting generally the type of population which finds its way into the casual ward of a modern institution, secondly the almost entire absence of the female sex; among 500 skulls selected at random, about 8 per cent. only were sexed as ♂?, ?♀, or ♀; these have not been included in the final count. It is, of course, quite possible that the number of female skulls is even less, but there was an orphanage attached to the hospital, and some children's bones were found in the ossuary, which may contain a few bones of nuns. The method of selection—for the number of bones is very great—was as follows: The skulls are arranged on shelves, and any skull without a basion was rejected, otherwise no selection was made; long bones were picked out where the epiphyses were sufficiently well preserved for measurement. Unfortunately the person who arranged the ossuary mixed up all the bones, and wired the wrong mandibles on to the crania. Although, therefore, as a whole, the bones belong to the same series of persons, the association of particular long bones with each other, or of particular mandibles with skulls is impossible. The sexing was of the type that Professor Pearson terms "anatomical sexing." All the bones were removed to the Anatomical Department at Valletta, and measured there.

(iv) The modern bones are from an ossuary, and were set at my disposal by Dr. Busittel, who was kind enough to allow us to use a room in the Anatomy School at Valletta. As some of the bones were used for teaching purposes, it is possible that a slight selection has been made; but enquiry into the method of obtaining the material inclines one to the belief that on the whole they are chance specimens, and a number of skulls were actually examined *in situ*. Sexing presented again considerable difficulty; fortunately, however, in a number of cases they had not been properly macerated.

141 125 In measuring the living it was necessary to find such as would submit themselves to examination; as far as possible, however, typical Maltese were taken. The

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female children are from Valletta and Sliema Government Elementary Schools, the male from the Government Elementary School and the Lyceum at Valletta, and include some of the students at the University.

The adult males have been grouped as follows:—(1) Malta, (2) Gozo. The Malta group has then been subdivided into Urban Districts; Rural Districts exclusive of Siggewe and Zurrico; Siggewe; Zurrico; sufficient measurements having been taken at the two latter villages to make statistical treatment of value (Table II). The adult females have been divided into (1) Malta, (2) Gozo. Malta has then been subdivided into Urban and Rural Districts (Table III). Unfortunately, sufficient women were not measured at any one village to make further subdivision practicable.

The individuals measured include among the men representatives of all social classes; among the women the lower social grades are chiefly represented. The men include professional men, gunners, militia, government messengers, men doing short sentences, paupers, and by far the largest class, "men in the street." The women include teachers, pupils at night schools, eighteen prisoners, patients in hospitals, paupers, and, again the largest class, any peasant woman who was not too frightened to be measured. All those who were either born of Maltese parents abroad, or although born in Malta are not of pure Maltese parentage, have been rejected. It is impossible in all cases to be quite certain, especially in the neighbourhood of Valletta. The measurements were taken in accordance with Martin's definitions (33); those on the femur follow Pearson (34). In working out the constants, the methods discussed in the Anthropology of Cyprus (37) have been followed. The limit of plotting selected has been such that the observations fall in from 15 to 20 groups. In head-lengths, for instance, this condition is fulfilled if the series be divided into 2 mm. groups. In order not to lengthen the report few comparative figures have been given.

For convenience of reference measurements have been referred to by their initial letters, which are given in brackets after each in the following list:—

A.—*Skulls.*

Ophryo-occipital length (O.O.L.).	Basi-alveolar length (B.A.L.).
Glabello-occipital length (G.O.L.).	Upper facial height (U.F.H.).
Greatest breadth (G.B.).	Facial breadth (F.B.).
Minimum frontal diameter (M.F.D.).	Orbital breadth (left) (O.B.L.).
Bizygomatic breadth (Biz.B.).	Orbital breadth (right) (O.B.R.).
Nasal height (N.H.).	Orbital height (left) (O.H.L.).
Nasal breadth (N.B.).	Orbital height (right) (O.H.R.).
Basi-bregmatic height (B.B.H.).	Palatal length (P.L.).
Basi-nasal length (B.N.L.).	Palatal breadth (P.B.).

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B.—*Living.*

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Glabello-occipital length (G.O.L.).	Upper facial height (U.F.H.).
Greatest head breadth (G.B.).	Total facial height (T.F.H.).
Minimum frontal diameter (M.F.D.).	Nasal height (N.H.).
Bizygomatic breadth (Biz.B.).	Nasal breadth (N.B.).
External orbital breadth (E.O.B.).	Internal ocular breadth (I.O.B.).
Bigonial breadth (Big.B.).	

The following indices were calculated on the living :—

Cephalic index (C.I.).	Total facial index (T.F.I.).
Upper facial index (U.F.I.).	Nasal index (N.I.).

On skulls, owing to the fact that it was impossible in the majority of cases to associate cranium and mandible, the total facial index was not calculated. The following additional indices were, however, worked out :—

Vertical index (V.I.).	Orbital index (left) (O.I.L.).
Mandibular index (M.I.).	Orbital index (right) (O.I.R.).

In a number of cases it was found necessary to work out the *significant difference* between two measurements. The method employed was described by the writer in a short paper on Cyprus, where it was shown that stress could be laid on the difference if it was greater than three times its own probable error. In order to avoid an excessive amount of figures, only significant differences have actually been tabulated. The symbols used are as follows: the Greek letter delta, Δ, signifies *difference*; epsilon, with a subscript delta, ϵ_Δ, means *error* of that difference. Measures, places and series are referred to by their initial letters, thus

	Δ	ϵ_Δ
	C-V	
G.O.L.	1·93	± 0·63

means that the difference in the glabello-occipital length between the Chapel of Bones and the Valletta crania is 1·93, with a probable error of 0·63. At a glance it is often difficult to tell whether such an error is significant; we have therefore tabulated the difference divided by its probable error, using at the head of the column the $\frac{\Delta}{\epsilon_\Delta}$ symbol. In the particular case referred to above $\frac{\Delta}{\epsilon_\Delta}$ is 3·06, and the difference is therefore significant. Owing to the necessity of preparing the data for publication in a comparatively short time, it has not been possible to work out as many correlations as might have been advantageous. A small number have, however, been worked out. Wherever it was possible to do so—that is to say, in the case of indices—the *coefficient of variation* method has been used, the formula employed

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being, if I = 100 A/B be an index, then a good approximation is arrived at by the formula

$$r = \frac{V_A^2 + V_B^2 - V_I^2}{2V_A V_B}.$$

To take an actual example, the correlation between the head length and the head breadth of the females from the urban districts is arrived at as follows:—The data are, Coefficient of variation, G.O.L. 3·44 and G.B. 3·78, and C.I. 4·05. The correlation will therefore be arrived at by adding $(3·44)^2$ to $(3·78)^2$, subtracting $(4·05)^2$ from the result, and dividing the whole by 3·44, multiplied by 3·78 multiplied by 2. The answer in this case is 0·3750.

The following measurements were made on the mandible:—

Coronoid height.	Breadth of ascending ramus, called for brevity ramus breadth.
Condylar height.	
Sigmoid height.	Condylo-symphysial length.
Symphysial height.	Bicondylar breadth.

In the Chapel of Bones measurements on the mandible were taken on both left and right sides, and the constants were worked out separately. In the case of the other fragments it was seldom possible to measure more than one side, and as the measurements in the Chapel of Bones showed how extremely close the dimensions on the two sides were, side has been disregarded elsewhere.

Only one index has been calculated, namely, the mandibular index, that is to say, condylo-symphysial length multiplied by 100 and divided by bicondylar breadth.

VI.—Physical Anthropology.

Before discussing in detail the cranial measurements, it may be convenient briefly to state the general dimensions of the crania. The means of skulls vary from 179 to 188 mm. in glabello-occipital length, and the means of the living males from 185 to 188 mm. The mean breadths vary from 133 to 141 mm. on the crania, and 150 to 152 mm. on the living adult male. The cranial capacity, estimated from the glabello-occipital breadth, the greatest breadth, and the basi-bregmatic height multiplied together, the product being multiplied by 0·0003849 + 96, varies from 1390·6 in the case of the Neolithic, to 1437·9 in the case of the Romano-Maltese, the Mediæval skulls show a capacity, by this formula, of 1405·5, and the modern 1393·7. It is unwise, probably, to lay any stress on these figures.

The cephalic index varies from 71·4, the mean of the Neolithic crania to 79·0, the mean of the modern crania and the vertical index from 71·2 in the case of the Neolithic crania, to 75·0, the vertical index of the Mediæval crania.

The variations in the general dimensions of the crania are sufficient to warrant a more detailed enquiry into the development of racial history in Malta. A complete

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141 172 list of the measurements taken and, where the series is sufficiently large, of their variation, will be found in Appendix II, Table I.[1] This should be read in conjunction with the following pages, from which, in order to make the general gist of the argument clearer, figures have, as far as possible, been eliminated.

The evidence which is so far available for the detailed history of man's development in Malta in early times is exceedingly scanty, and no ancient remains can be treated statistically. Such remarks as occur in the next few paragraphs can only be considered as tentative. The cranial measurements available seem to suggest that the head form of the Maltese has grown consistently shorter, both absolutely and relatively, since the Neolithic Age. The head breadth is remarkably consistent from Romano-Maltese times onwards. The skulls from Hal Saflieni (Malta Local Neolithic), however, were extremely narrow, in great contrast to the modern crania. Living heads are 10 mm. longer than modern skulls among the males, in the females the difference is somewhat greater, but the modern series of female skulls is so very small that no reliance can be placed on it. Male heads are about 11 mm. broader than male skulls. The greater thickness of the scalp where the greatest head breadth is taken, may be accounted for by the influence of the temporal muscle.

The cephalic index appears to have increased continuously from the earliest times onwards, *pari passu* with the *decrease* in the glabello-occipital length. The index of the Romano-Maltese males is noticeably low, that of the females extremely high. This result is possibly due to the small numbers. There certainly seems to be a definite increase in the numerical value of the index from Mediæval times onward. The modern female crania are noticeably more brachycephalic than the modern male; indeed, there is a difference of 4 units, which closely parallels the difference between the Romano-Maltese male and female. This difference, although probably exaggerated by small numbers, appears to be based on some definite disparity. In Malta the living females are significantly more brachycephalic than the males. It is curious, however, that the Gozo males and females show no difference in their cephalic index. Probably in Gozo the male population is less disturbed than in Malta. The normal allowance of 2 units difference between the cephalic index of the living and the dead is borne out by comparing the modern Maltese heads and skulls.

The variations in head length and head breadth appear to be very similar in Mediæval and modern skulls, and equally as between crania and living people. Considerable stress should probably be laid on the fact that a large series of crania from a Late Mediæval ossuary (the Chapel of Bones) show practically the same degree of variation in their cephalic index as a chance collection from a modern ossuary, and as the modern inhabitants taken from all over the island.

The basi-nasal length appears to be consistently the same from Neolithic times onwards. This absence of change is of importance when we consider that the head length has undergone marked changes. It is probable, therefore, that the changes are taking place in the occipital region. A comparison of the contours of

[1] [see pp. 197-199.—Analyst]

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the skulls suggests that the Maltese, for some reason, are developing a more plano-occipital or Armenoid type of skull than their ancestors possessed. This change is not accompanied by any great difference in the basi-bregmatic height. Although there is a difference of 2 mm. between the height of the Mediæval and modern skulls, as measured from the basion to the bregma, the very great variation of that measurement among the modern skulls makes it doubtful whether we can lay any stress on so small a difference. It is true that the vertical index shows certain changes, but they may be ascribed rather to the change in head length than to a difference in height. The measurement of the minimum frontal diameter adds further weight to our suggestion, that the changes which are taking place in Maltese skulls are confined to the occipital region, as there is no difference between this measurement in the earliest and in modern skulls. The ophryo-occipital length appears to be always about 2 mm. shorter than the glabello-occipital length, suggesting that few if any changes have taken place in the ophryonic region.

Passing to the consideration of the measurements associated with the masticatory apparatus, the bizygomatic breadth is extremely small in the Neolithic crania, but the numbers are very few. The Late Mediæval crania from the Chapel of Bones are significantly greater than the modern skulls in this measurement, and also in the basi-alveolar length, whereas the Romano-Maltese seem to approach more closely in both measurements to the Mediæval than to the modern crania. This may be due to a harder diet.

The upper facial height in the Hal Saflieni (Malta Local Neolithic) material is similar to that of the Romano-Maltese, but the Mediæval crania have a significantly greater measurement than the modern. The facial breadth is small in the Hal Saflieni material, but the Mediæval skulls are significantly broader in the face than the modern. The upper facial index is very close to the same figure from Neolithic times onwards, except for the small series of Romano-Maltese skulls, which have a lower index.

Some of the above measurements are probably more affected by the respiratory apparatus than by the action of the jaw, although it has been convenient to consider them in the above paragraph. The same is, to a certain extent, true of the palatal measurements, one of which, the breadth, is certainly intimately correlated with the breadth of the nose. The palatal breadth appears to have been very small in Neolithic times—smaller than can quite be accounted for by the smaller nasal breadth—and it is possible that a rather enfeebled masticatory apparatus may be the predominant factor in this particular case. Otherwise the palatal breadth has remained more or less constant. Certain changes appear to have taken place in the palatal length. In spite of the unusual smallness of the palatal breadth, the mean palatal length happens to be the greatest recorded. It is quite possible that this is an illusory figure. It is interesting to note, however, that the palates of Mediæval Maltese are significantly longer than those of their modern successors. This is

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141 quite possibly due to the same causes as are at work in the case of the bizygomatic
172 breadth.

Turning to the respiratory apparatus proper, the nasal breadth of the Neolithic people is rather narrower than that of the Romano-Maltese, but only six Neolithic crania were available for measurement. The Mediæval crania have practically the same breadth of nose as the Romano-Maltese. The modern examples from Valletta, however, have a significantly narrower nose. The nasal height shows no appreciable difference. The nasal index shows considerable variation, accompanied, as usual, by a high coefficient of variation. Under these circumstances it is difficult to argue about the actual changes since early times. It is possible, however, that the nasal index was slightly greater in ancient than in modern times. It is clear from the figures that the nasal index of the Mediæval Maltese was significantly greater than it is at present. This point is of special interest because if, as has been argued, a number of persons from Western Europe were represented in the ossuary of the hospital, we should have expected to find a narrower nose, whereas in actual fact this is not the case.

The breadth of the orbits shows greater divergences than any other measurement. In the case of the left orbit the difference between the Mediæval and the modern bones is nearly seven times its probable error; in the right orbit it is over nine times its probable error. It is difficult to suppose that such a divergence should be without significance. It is not clear, however, what changes have taken place since Neolithic times, although the earlier orbits tend to be rather broader. There is no difference in the orbital height among the more recent bones, though the early bones seem to be not quite so high. The orbital indices are probably of great importance. The difference between the Neolithic and the modern indices amounts to eight units, the modern index being the greater. Parsons[1] has argued that a microsemic orbit is especially characteristic of Neolithic man, an outcome, as Thomson has shown, of powerful jaw development. In spite of the fewness of our numbers, the Neolithic material from Hal Saflieni indicates that Parsons' generalization is applicable to Malta, and that the introduction of a change to Armenoid characteristics has considerably affected the form of the orbit.

The difference between the left and right orbits is striking in our two larger series. In the case of the Mediæval bones the difference in the orbital breadth is ·52 with a probable error of ·085, a difference that is certainly significant. In the modern series the difference is actually greater, but owing to the smallness of the numbers the probable errors are too great to make this significant.

The comparative variation of the Mediæval and the modern crania is a matter of considerable importance. Unfortunately the number of earlier skulls is too few for statistical treatment, but the results of a comparison of modern crania with

[1] Professor Parsons has been good enough to discuss the matter with me personally.

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those from the Mediæval hospital certainly suggest that those authorities who maintain that the hospital probably contained, amongst others, the bones of people from Western Europe are possibly in error. We should in that case have expected to find a high degree of variation. We do not do so. It may well be argued that the modern crania are too few to base any satisfactory arguments on, and we fully admit that it is unwise to argue from a series that never exceeds 42, and in some cases falls as low as 29. It would appear, however, that the modern series, of the majority of which the provenance was fairly exactly known, is consistently more variable than the Mediæval series from the Chapel of Bones. It would certainly be worth while to make a series of measurements on about 100 modern crania to see whether this statement really represents the truth.

Except in a few cases, it was impossible to associate mandibles with the crania to which they belonged, and unfortunately at the time when measurements were made on modern crania few mandibles could be discovered. The only series, therefore, of mandibles which could be treated statistically are those Mediæval specimen from the Chapel of Bones. Even in this case it was not found possible to get a series as large as 300 for every measurement. The majority of these, and probably all, are male; any doubtful cases having been rejected. The Neolithic and Romano-British mandibles are also probably male. The Bronze Age mandibles appeared from the associated bones to be female, but the condition of the latter was such that a definite opinion could not be expressed. In general terms there are certain marked differences between the mandibles from Hal Saflieni and elsewhere, whereas the Romano-Maltese and the Mediæval mandibles, although differing in detail, present a general similarity. The coronoid height and the condyloid height of the Neolithic mandibles are both lower, the ramus being of about the same breadth. The condylo-symphysial breadth is about the same. The Mediæval mandibles have a slightly lower ascending ramus than the Romano-Maltese, but the former are slightly more stoutly built; the mandibular index is quite possibly about the same. Generalising, we may say that the Neolithic mandibles belong to a type with a rather short, broad ascending ramus, and a shallow sigmoid notch, whereas the Mediæval mandibles have the higher ascending ramus and the deeper sigmoid notch which are usually associated with various branches of the Alpine race.

A collection of teeth was made from the bone heaps at Hal Saflieni.[1] Unfortunately no teeth of more recent date are available. Out of a total of 224 adult teeth from Hal Saflieni (Malta Local Neolithic), 15 upper incisors and canines showed a marked edge-to-edge bite. Caries occurred in 19 cases; there was a complete erosion of the roots in 2. One incisor had two roots. Speaking generally, the teeth

[1] I am indebted to my brother, Mr. J. L. Dudley Buxton, for examining and reporting on these teeth from the point of view of a dental surgeon.

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172 164 did not differ from a chance collection of modern civilized teeth, except that caries was less common.

Teeth from Hypogæum, Hal Saflieni (Malta Local Neolithic).

	1 Normal Teeth.	2 Carious Teeth.	3 Teeth showing Marked Attrition of Edge-to-edge Form.	4 Teeth showing Marked Attrition.	5 Total Adult Teeth.	6 Deciduous Teeth.
Molars	21	10	—	18	48	3
Premolars	26	6	—	36	62	—
Canines	9	—	7	15	31	2
Upper incisors ...	23	1	8	23	54	—
Lower incisors ...	2	2	—	27	29	—
Total ...	81	19	15	119	224	5

Teeth included in Column 2 may also be included in Columns 3 or 4; Columns 3 and 4 are mutually exclusive.

141 172 Summing up, the general characters of the Maltese skulls at our disposal, the physical type conveniently termed "Malta first race" is associated culturally with the Malta Local Neolithic. Skulls of this type are long, narrow, and slightly built. They have low orbits, narrow zygomatic arches, and a jaw which, though often not absolutely large, has a low ascending ramus, a shallow sigmoid, and considerable breadth in the antero-posterior diameter. They appear to be representatives of the Mediterranean race.

The skulls of succeeding periods, conveniently termed "Malta second race," and associated with numerous cultural periods, are, as a general rule, shorter, broader, more stoutly built, larger, and have higher orbits. The ascending ramus of the jaw is high, and the antero-posterior diameter is small. Although among a large collection of these crania single specimens exhibit the characteristics of the Mediterranean type, and some even occur with features which are usually considered to be typical of the Nordic race, the majority, in addition to the features already mentioned, show that peculiar contour in the occipital region which is usually associated with the type called by Von Luschan "Armenoid."

Living Material.

141 Apart from those questions which have already been discussed when dealing with the general anthropology of Malta, special problems are connected with the living. In the first place, the sex and birthplace are definitely known, and the age, at least approximately. Secondly, the numbers are usually greater. Thirdly,

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although the measurement of the long bones on the living was found to be impracticable, stature and sitting height could be measured. The purpose of this section is to study the living material intensively, with a view to finding out how far there are present differences within the islands. 141

In working out significant differences a comparison has been made between Malta and Gozo, between the urban and rural districts in Malta, between the urban districts and Siggewe, between the urban districts and Zurrico, and between Siggewe and Zurrico, in the case of the males, and between Malta and Gozo and the urban and rural districts in the case of the females. First the *means* have been compared; secondly, the *variations* from those means. In dealing with absolute measurements the *coefficient of variation* has been used, in the case of indices we have employed the *standard deviation*.

The stature throughout the whole archipelago appears to be very consistent. In both sexes the people from Gozo appear to be rather taller. The difference between the sexes amounts to rather under 15 cm.

The head measurements do not present any very striking differences. We have only tabulated those which are probably significant. Among the males there is a significant difference between Malta and Gozo in the following head measurements: Glabello-occipital length, minimum frontal diameter, external orbital breadth, bigonial breadth, and both nasal measurements, the Maltese being in every case larger. Between the urban and rural districts there is no difference except in the nasal height. Siggewe differs from the urban districts in six characters: minimum frontal diameter, bizygomatic breadth, bigonial breadth, total facial height, nasal breadth, internal ocular breadth. The differences between Zurrico and the urban districts are of a different nature. Again there is no difference in glabello-occipital length, or external orbital breadth, but in this case there is no difference in minimum frontal diameter or bigonial breadth. All the other characters are significantly different, the urban population having in every case the larger dimensions. As a final test, Siggewe and Zurrico were compared. Siggewe presented larger dimensions in every significant case, except minimum frontal diameter, which was significantly smaller, the other significant differences being in greatest breadth, external orbital breadth, and the nasal measurements. The significant differences in the case of the females appear in other characters. Between Malta and Gozo three measurements differ: bizygomatic breadth, external orbital breadth, and internal ocular breadth, but there are differences in upper facial height, nasal height, bizygomatic breadth, and external orbital breadth between the urban and rural districts.

There is very little difference in the variability. Among the males the minimum frontal diameter varies differently in the urban districts and in Zurrico, and as between Siggewe and Zurrico. The variability of the external orbital breadth is different in Malta and Gozo, and that of the upper facial height in the urban and rural districts. The total facial height differs in Malta and Gozo, and the nasal

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141 height in the urban districts and Zurrico. Among the females there is a significant difference between Malta and Gozo in greatest breadth, bigonial breadth and nasal height. There is no significant difference between the urban and rural districts. Between male and female, the males have a significantly greater bizygomatic breadth, the females significantly greater external orbital breadth, nasal height and cephalic index.

It is impossible to compare the absolute measurements of males and females. There is no significant difference in the total facial index between males and females, the other three indices are, however, significantly different, the females having the greater index in every case.

These differences are extremely difficult to correlate with actual facts. That the urban and rural population should resemble each other so closely is a striking feature, especially since we know that Valletta is, and has been, continually receiving additions, both from the outside world and from other parts of the island. In spite of this immigration, however, we do not appear to get an appreciably larger variation in the town than in the endogamous villages, if we take them *as a whole*. Contrasts arise, however, between the urban districts and individual villages. It may be suggested tentatively that the small local variations which appear to occur in the various villages tend to be swamped if we take all the villages together, as we can do artificially by pooling our measurements, and actually by measuring individuals from Valletta and the fortified suburbs, which have only existed for under four hundred years, that is to say about eleven generations, and have a population recruited from all over the island. This fact is all the more remarkable because, as we have shown, foreign blood has certainly been pouring into Valletta for a considerable period.

It may be argued that possibly the isolation in the island is not sufficiently complete, yet there is as much difference between the urban districts and the village of Zurrico as there is between Malta and Gozo, although in different directions. The isolation of the villages, a social more than a geographical division, has proved as strong or as weak a frontier as the hazardous strip of water between the two islands.

The measurements on females throw little light on this point. There is a greater difference between the urban and rural district women than between those of Malta and Gozo; the latter series are unfortunately too few for more than a tentative inference. Social conditions cannot contribute much in the result; because whereas the women are comparatively stationary, apart from country and town marriages, there is considerable movement of the males.

141 132 Let us now consider the differences in the facial measurements. Professor Arthur Thomson (39) has suggested that the temperature and the humidity of the air have considerable effect on the form of the nose. The rainfall, at different stations at which observations are taken, differs to quite a large extent. For example, in

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1919, 14·18 inches were recorded at Casal Lia, and 19·44 at Naxaro. Unfortunately no comparative humidity data are available, but such a striking difference in rainfall argues that the inhabitants of those two places breathe an atmosphere which differs at least appreciably in moisture. Again, local variations in temperature, if not great, may prove significant. At the same two stations the annual means of temperature for that year were, maximum 71·5, minimum 56·8, mean 64·1 at Casal Lia, and 69·9, 53·7 and 61·8 respectively at Naxaro, a big difference if the total area of the archipelago is taken into consideration.

The differences in the upper facial height may be, and probably are, associated partly with the respiratory (including as it does the nasal height) and partly with the masticatory apparatus, and the same is true of the total facial height, which includes both the two last-mentioned factors. It is interesting to note that differences in the total facial height are always associated with differences in the bizygomatic breadth; differences in the upper facial, with differences in the nasal height. The converse, though true in the former case, is not true in the latter. The differences in the bigonial breadth accompany differences in the minimum frontal diameter on the two occasions where they occur, but the excessive minimum frontal diameter at Zurrico is not associated with any irregularity of the bigonial breadth. The differences in the external orbital breadth do not appear to have any particular associations.

Although no doubt it is possible that these local differences may be largely due to heredity as opposed to environment, it would seem not unlikely that the present rather insignificant differences, taken as a whole, may be ascribed to small variations in climatic and economic conditions, to most of which the people have been subjected for many generations.

The differences between the sexes in head form is difficult to estimate. Obviously we cannot compare the absolute measurements, because the female is built on a different scale from the male, and to reduce them to similar proportions would be to abandon certain fundamental anatomical principles. There remain, however, a comparison of the variations and the indices. The former do not present great differences. The nasal height and the external orbital breadth of the female are appreciably more variable. The bizygomatic breadth of the male has a significantly wider dispersion. It is possible that in the latter case the greater muscular development of the male may account for this variation. The exact significance of the striking differences between the indices is not apparent.

Pigmentation.

Pigmentation figures bring out a certain contrast already suggested by measurements, and fail to confirm others. The figures are, however, rather unsatisfactory, and it was not found practicable to make more than three divisions in hair or eye

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142 colour, without risk of considerable confusion, where work had necessarily to be done, sometimes under ideal conditions, sometimes in glaring sunlight, and sometimes in the not too well-lighted interior of a Maltese house. Both in hair and eye colour Zurrico stands by itself. In that village one man in three has black hair, and two have brown. In the rest of Malta and Gozo the reverse is true. About 1 per cent. fair-haired people are found alike in Zurrico and elsewhere. In Zurrico two men out of three have brown eyes and there are slight odds in favour of the third man having hazel eyes rather than blue. In Siggewe, where black hair is slightly less common than elsewhere, out of ten men, five tend to have brown eyes, four hazel, and one blue. Elsewhere in Malta blue eyes are about twice as common, that is to say out [103] of ten men five have brown eyes, three hazel, and two blue. It is perhaps worth mentioning that the name Zurrico, connected with the root *azrak*, means blue, and I was told that the village was so called because blue eyes were more common there than elsewhere.

In Gozo, although the hair colour does not differ materially from that of Malta, in round numbers, out of ten men seven have brown eyes, two hazel, and one blue.

In Malta the hair colour of the women does not differ to any great extent from that of the men, although fair-haired women appear to be slightly more uncommon. Brown eyes, however, seem to be much commoner, and hazel and blue eyes about half as common. With so small a series, however, it is possible that this result is merely illusory.

Comparative material from the Eastern Mediterranean shows very great discrepancy with these data, especially in relation to the number of blue eyes, which are nearly twice as common in Malta as they are in Cyprus, and more than three times as common as they are in Crete. The number of fair-haired persons in Malta is small, smaller even than in Cyprus, whereas generally speaking fair-haired people, though always remarkable and much admired, are not uncommon in Greek lands, not only among gods and goddesses, but even among the ordinary folk.

It would be interesting to correlate these differences in pigmentation with differences in climatic conditions. Up to the present, however, we have not succeeded in finding any generalization which would fit the figures, and the matter must remain *sub judice* until further data is available.

141 142 We have so far been dealing with hair colour and eye colour separately. By the use of Parsons' index (36) it is possible to take both into consideration. Parsons takes the percentage of dark brown and black hair, adds the percentage of dark eyes, and divides the result by two. This final result he terms his colour index. Where the eyes have been graded in three shades, *e.g.* blue, neutral, and brown, or some similar classification, he includes half the neutral group as well as the brown eyes under the heading dark. As our eye colour was graded in this way we have

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followed the above procedure. Parsons' indices for our material will then be:— [41] 142

	♂	♀
Urban Districts	67·4	72·3
Rural Districts	67·7	73·1
Siggewe	66·3	—
Zurrico	54·2	—
Malta	67·5	74·9
Gozo	74·5	77·5

For comparative purposes we have worked out the Index of Pigmentation for some places in the Eastern Mediterranean. The values, which refer only to males, are as follows: Albania 53·3, Cyprus 55·8, Crete 78·0, Meligala 61·1, Mani 66·6.[1]

Parsons, in dealing with the British Isles, draws attention to the following facts. First that the males show greater variation; secondly that the females are darker than the males, in the British Isles the difference amounting to about 2 degrees; and thirdly, that where the men are fairest the discrepancy between the two series is greatest, while where the men are very dark, the discrepancy is quite small. These conclusions are strikingly confirmed by our Mediterranean figures. We have not included any very small series from Malta, and, therefore, we do not get some of the irregularities which Parsons attributes to small numbers.

The difference between Zurrico and the rest of Malta is very striking. It will be noticed that it is even greater than that between Malta and Gozo, and shows the Zurrico men to be markedly fairer, with the comparatively low index of 54·2. The urban districts, rural districts, and Siggewe all have an index that does not differ by more than the probable error. Gozo, both among the males and the females, has a higher index, *i.e.* a greater percentage of "darkness." The exact significance of these figures is at the present stage of our understanding of pigmentation in the Mediterranean area not easy to unravel. If we take comparative data it will be seen that the Cretans are considerably darker. This may be reasonably interpreted as suggesting a higher percentage of Mediterranean admixture. The Albanians appear to belong to a very different racial stock. As far as measurements go there is, on the whole, not very much resemblance between the people of Zurrico and those of Cyprus, although the appearance of both would suggest that they belong to the same racial stock. The resemblance between the Maniots and the Maltese, as far as pigmentation index is concerned, is very striking. When other measurements are considered, some resemblances appear, but there are certain very great differences. The Maltese and the Maniots are closely alike, not only in the proportions of the cranium, as represented by the cephalic index, but also in the absolute measurements of head length and head breadth. The facial and nasal measurements are, however,

[1] For absolute values see p. 196 of reference 38.

3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

extremely different, due possibly to differences in environmental conditions or dietary habits.[1]

Pigmentation figures, then, seem to support a conclusion which had already been arrived at on other grounds, namely, the relationship between the Maltese and the mixed Armenoid population of the Eastern Mediterranean.

Coefficients of Correlation.

The coefficients of correlation which have been worked out refer only to those figures which are utilized for indices. Unfortunately some of the series are too small for this treatment. For the most part the coefficients of correlation do not suggest, in the four series of characters which were selected, any great differences. There is a significant difference between the correlation of the total facial height and the bizygomatic breadth in the male and female, a condition which is probably due to the more developed masticatory apparatus of the male. The difference between the correlations of head length and head breadth between the urban districts and Siggewe is of interest when we compare the means and the coefficients of variation of those measurements absolutely, and confirms to a certain extent our hypothesis that Siggewe possibly represents a local deviation from the normal Maltese type. Differences between the urban district females and the rural district females are found in four characters (total facial height, bizygomatic breadth, nasal height and nasal breadth) suggesting conditions one of which can be referred to food and the other to climate, but the absence of confirmatory evidence in the males makes it necessary to withhold any conclusions until further correlations have been worked out.

Looking at the figures generally, the correlated characters show remarkably little correlation, and the absence of real differences between the various groups goes far to suggest that the differences between the various parts of the archipelago are not in any way of fundamental importance.

The coefficients of correlation on the skulls are unsatisfactory, owing to the paucity of material. The extremely small correlation between glabello-occipital length and greatest breadth from the Chapel of Bones is of an unusual character. It can hardly be illusory when worked out on so large a series, but the explanation is not apparent from our present data.

VII.—Racial Problems.

The racial problems connected with Malta are extremely difficult to deal with, because they raise certain social questions. Historically the matter may be summarized briefly as follows.

[1] Both Mellgala and Mani are situated in the Peloponnese.

3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

The megalith builders, who may be conveniently termed "Malta first race" (culturally "Local Neolithic"), are certainly akin to the early, and, indeed, present inhabitants of North Africa and to those of Sicily, Corsica, Sardinia, and Spain, and belong to what is usually known as the Mediterranean race, differing from many skulls of this type in having a shorter nasal aperture, and therefore a bigger nasal index.

The inhabitants of the Barbary coast have been discussed at great length by Bertholon and Chantre (41). A series of 124 skulls (unfortunately the sexes have been mixed) from Carthage, dating from the sixth to the third century, B.C., shows a close resemblance to the "Neolithic" skulls found in the Hypogæum at Hal Saflieni. The low standard deviations, even when the sexes are mixed, *e.g.* cephalic index, mean 74·73 and 2·94 σ[1] suggest the absence of any Armenoid blood in Carthage, and a small series (35) of modern crania (♂ + ♀) from Tunis show almost identical figures (*e.g.* cephalic index mean 74·31 and 2·96σ).

In Sicily from Eneolithic times onward the population is of the same type. Even in a series of two hundred modern Sicilian skulls, Giuffrida Ruggeri found only 5 ♂ and 2 ♀ of the Eurasiatic form, one was doubtful. Apart from the small series from Anghelu Reju, the modern inhabitants of Sardinia and Corsica appear to belong to this type (46).

It is remarkable that wherever we find Mediterranean man he shows little variation, suggesting a primitive stock which has maintained itself in certain areas.

The "Neolithic" Maltese (Malta first race) can have differed but little from our own Neolithic ancestors, except in the form of the nasal aperture. The modern people differ from the modern British type in head form, in stature, and in the general build of the skeleton. It would seem as though these differences were of essential importance. The Maltese appear to be a mixture of a people who certainly form a part of the population of the British Isles, but there is a second element that is not akin. It is noticeable that, as would appear from recent work, the Neolithic element seems not to have been entirely swamped in the British Isles; on the other hand we have shown that in spite of continuous influx of Mediterranean blood, it has not been able to dominate the population in Malta. Possibly the geographical conditions of the island are particularly favourable to the continuance of the race which has since developed.

These megalith builders are succeeded by a different type of folk, exhibiting Armenoid characteristics (Malta second race). The most interesting question of Maltese anthropology is, where did these late arrivals come from, and when did they come to Malta. Early skulls are unfortunately missing at present in the Mediterranean area. The immigrants are not racially allied to the people of Italy, Sicily, or the Barbary coast; they differ fundamentally from what appears to be the type

[1] σ is used throughout this paper as a symbol for "standard deviation."

3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

144 174 in Albania ; they resemble some of the elements in the early population of Cyprus, but the closest parallel appears to be Crete, some parts of Greece, and the Islands of the Sea. Such evidence as we have suggests an immigration from the eastern part of the Mediterranean. We have already argued elsewhere (38, p. 92) that even early in the Bronze Age there existed in the Eastern Mediterranean a mixed stock consisting of elements of Armenoid and Mediterranean man, and suggested that such mixing possibly took place as early as the end of the Neolithic period. It seems possible that these people arrived in Malta at a much later date. Unfortunately the gap is a long one. Plenty of Neolithic material has survived, we have a few scattered finds in the long intervening periods, and a small and scarcely adequate number of crania of the Romano-Maltese time.

We have argued above that the Malta second race cannot have come from anywhere but the Eastern Mediterranean, and that they show no affinities with the Carthaginians. We have at present, however, no satisfactory cranial evidence from Carthage earlier than the sixth century B.C. We know, on the other hand, that Carthage was closely connected in earlier times with the great trading cities of the Syrian coast. The conditions in Malta and North Africa are extremely different, and whereas it might be impossible for people of Armenoid type to establish themselves on the coast of North Africa, this argument would not affect the possible establishment of the same type in a comparatively isolated island. We know, further, that a people of undoubtedly Syrian origin, namely the Jews, have, in Tripoli, to a large extent, lost their typical head form, while retaining their religious, social, and, it would appear, at least some of their physical characteristics. It is possible, therefore, that the origin of the Malta second race must be looked for in Phœnician traders of Armenoid origin, who may have come either directly from the Eastern Mediterranean or indirectly via Carthage.

There can be little doubt that such a change must have taken place at a comparatively late date in the history of Malta, but it would seem extraordinary that an invasion of any such race could have entirely altered the population of an island. We have at present no evidence to show how the change was affected. It may have extended over some generations, but in that case we should have expected to find an intermediate stage between Malta first and second races. Our present evidence, however, does not, unfortunately, cover that transitional period. It is possible that such a period may be discovered. On the other hand we have the possibility of the new influx of people exterminating, or nearly exterminating, the previous inhabitants, an event which is not without parallel in modern times. In North Africa the problem is somewhat different. Here the Armenoid peoples can only have represented a comparatively small element in the whole population, and we know that there are certain brachycephalic elements surviving till to-day. Again, the inhumation burials in Carthage which have as yet been explored are so few, and show so little variation in cranial form, that they may quite well belong to

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some definite section of the population. On the one hand we have on the mainland a series of settlers among a large indigenous population, and on the other hand we have a further band of settlers, on a small island, on which it is quite possible events occurred which would have been impossible amidst a large population.

We have not at present sufficient statistical material in early times to enable us to judge how far there has been a change in the standard deviations since the coming of the second race, which would enable us to say whether there ever was a time in Malta when a considerable mixing of races was taking place; and it must always be remembered that the second race may have been, at least in origin, considerably intermixed with Mediterranean blood before they ever ventured as far as Malta.

It cannot be denied that the second race has altered since its arrival in Malta; but just as in most parts of the Mediterranean, even at comparatively short distances apart, we find local divergences, it would hardly be surprising that we should also find differences in the time series, namely, that people of one age should show a slight physical difference from those of the other. The internal differences, however, in Malta appear to be but insignificant when compared with the differences between the Maltese and the other inhabitants of the Mediterranean, and it seems justifiable —at least for purposes of intensive study—to regard them as a Maltese sub-race.

Summing up their characters, they are distinctly long-headed, though hardly so long-headed as the Cretans, but nearly 10 mm. longer than the Cypriots; they are broad-headed, having about the same head breadth as the Cretans, and a greater breadth than the Cypriots. The change since ancient times has operated both in shortening the length and increasing the breadth, the height of the cranium having remained constant. The face is much broader than in ancient times; the orbits are higher and narrower: the nose longer and broader, so that the nasal index is not appreciably altered.

The Mediæval skulls in the Chapel of Bones presented characteristics similar to those of the skulls in the modern ossuaries. Although some variation occurred, as might be expected in a series which might contain a number of foreigners, the standard deviations are sufficiently small to suggest that on the whole the skulls are those of adult males of a normal population. The standard deviations are, indeed, smaller than those of the series from the modern ossuary. Both series, from the Mediæval Chapel of Bones, and from the modern ossuary, are large in size—that is to say, absolutely long, high, and broad; in the majority, the brow ridges are very well developed, and there are other indications of considerable muscularity. It is possible that some of the skulls, on the sex of which it was not possible to express an opinion, may be males of Mediterranean origin, as these latter appear as a general rule to be smaller. A few appeared to be Negroid.

Although skulls which presented Negroid characters were not uncommon from Saracenic—possibly earlier, and certainly later—graves, the Negro element in the

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144 [567] population does not appear to be very great. Slaves were, we know, introduced in large numbers by the Knights of St. John, and a fine old building still remains in Valletta as a witness to the number of Negroes kept in captivity, but yet there appears to have been great segregation. The Turk in Cyprus seems to have been more merciful to his slaves than the Christian in Malta, possibly because of the difference in the social systems. It is doubtful, therefore, whether the Negro element is more than a negligible factor in Maltese ethnology.

Cases certainly occur, in all periods, of extremely long skulls of the hypsistenocephalic type of Giuffrida Ruggeri. Some of these specimens appeared on a careful examination to present Negroid characters; the majority seemed to be well within the range of normal variation of the ordinary Mediterranean type. If mixing with Alpines immediately raises the standard deviation of Mediterranean man, it is to be expected that a mixture with Negro or Proto-Ethiopic would have the same effect; without definitely denying the possibility of this type in Malta, it would seem a more reasonable hypothesis to suggest that those crania which present a combination of the characters of a long head with considerable prognathism and a wide nasal aperture probably belonged either to actually imported Negroes or to their descendants.

Although the census figures show a different result, it is of interest to note that among the people who presented themselves for measurement in villages or institutions, practically all the foreigners came from the Barbary coast.

[563] There can be little doubt that there has been considerable Italian influence in the island for a long period, and we have already shown that at the present day the largest resident foreign element apart from the garrison is Italian. It seems possible that the same influences, whatever they were, which made it possible for the early population to be swamped by the present type, have also made the latter immigrants, of a type similar to the Neolithic people, unable to stand against the domination of the sub-race (Malta second race) now established in the island.

144 563 A question of considerable importance from the practical point of view is whether there is any essential difference between the Maltese and the nations of Western Europe, who, either singly or collectively, have occupied the island since the Middle Ages. Social distinctions have operated during the whole time, but there is evidence to suggest that the Knights may have considerably affected the population, especially that of Valletta. Some of the people of Rhodes, who followed the fortunes of the Knights when the latter were driven from the Eastern Mediterranean, settled in Malta. Mercenaries were employed by the Order, and in some cases never returned home. In later times also, the Knights' vows of chastity, never very strictly adhered to, were entirely neglected, and their illegitimate children, whose fathers were predominantly French, contributed a considerable element to the population (28, p. 46). It is probably to such influences that we owe those crania in the Chapel of Bones which appear to show Nordic affinities.

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The stay of the French in the island was too short to have any effect on the population. A social barrier has been built up between the British and the people of the land, and the general impression gained is that, though there are a certain number of mixed marriages, there cannot, even after three generations of a large, if floating, British element in Valletta, be more than a very thin British strain in the population. 144 563

We have shown, in dealing with the history of the island, how extremely difficult it is to account for the wholesale immigration of an Armenoid-like population at any period. We have also shown how, in spite of the continual immigration of people of the Mediterranean stock, the Maltese type (*i.e.* Malta second race, displaying Armenoid characters) appears to have persisted for a long period. It would seem, therefore, a point worthy of further consideration, whether the development of the Maltese along the lines they appear to have followed may not be due to certain definite geographical factors of whose influence we are as yet unaware. It is possible that if we had at our disposal a long unbroken series, instead of larger or smaller series from Neolithic, Mediæval, and modern ossuaries, we should not find such striking contrasts as we do at present. Anthropological data from various parts of the Mediterranean show that there is very often a significant difference between two villages in different valleys of the same mountain range. It is possible that even the few generations which have elapsed between the building of Hal Tarxien and 1921 may be the equivalent, in time, of such a journey in space, and certain big changes may have taken place owing to changing geographical conditions. There can be little doubt that the climate of Malta has changed very much, not only since the first terrace was cut in the Weid Dalam, but even since the formation of the second terrace. We have also suggested that the evidence from Professor Zammit's excavations at Hal Tarxien hints at a change in climate since Neolithic times. The change in the structure of the population may be due, therefore, partly to geographical as well as to historical causes. 144 174 132

Whether or no the development of the Maltese sub-race is due to particular geographical conditions, there can be little doubt that, in Malta at least, the strain is biologically remarkably successful and extremely fertile. In spite of the high infant mortality which has existed in the past, they have continued to increase, and the modern developments of hygiene and the care of infants are likely to make the increase still more rapid. If the overcrowding continues, in a comparatively short time we shall be faced with conditions in the island which would appear to be, biologically speaking, unsatisfactory. Sanitary conditions can be improved, food can be imported, but excessive overcrowding may bring its own remedy, either in disease or in a diminished fertility. The present fertility is quite possibly due to some underlying climatic condition. In spite of lack of water, Malta has long been extremely fertile botanically, and was famed for this in classical times. The Maltese goats, by far the most abundant large mammal of the island apart from 161 842 [165] [231]

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man, are also unusually fertile, and the females possess remarkably developed udders. Possibly similar causes make both man and the goats fertile. If this is so, emigrants from the island will probably, after a short time, lose their fertility,[1] whilst the only limiting factors on the island itself will be space and the food and water supply.

Summarizing our general conclusions, the race in Malta which is associated with the period of great megalithic buildings—a cultural stage we have termed "Malta Local Neolithic"—appears to be closely akin to the Mediterranean race. This is our "Malta first race." At a later date, possibly towards the end of the Bronze Age, but more probably during the Early Iron Age, Malta was peopled by a race with different characteristics, our "Malta second race." These people are of Armenoid type, but probably have an admixture of Mediterranean blood. Their origin appears to be the Eastern Mediterranean. They may have come to Malta either directly or by way of Carthage. They may have destroyed the previous inhabitants, or they may merely have pursued methods of peaceful penetration. This race has firmly established itself in Malta, and all subsequent introduction of foreign blood has failed to raise the variation. During the course of years certain changes have taken place; there are also certain local variations, but the differences between Malta and Gozo are not greater than the differences between the general population of Malta and at least one, and possibly more, of the more isolated villages.

APPENDIX I.

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[1] Of interest in this connection is the fact that there is at present a Maltese colony in Detroit, U.S.A., and it will be instructive to observe whether, amid alien surroundings, the strain is able to perpetuate itself and to retain its fertility.

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APPENDIX II.

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TABLE I.—SKULL MEASUREMENTS.

Character.	Malta Local Neolithic, Hypogæum, Hal Saflieni. ♂ No.	♂ Mean.	Romano-Maltese. ♂ No.	♂ Mean.	♀ No.	♀ Mean.	Mediæval, Chapel of Bones. ♂ No.	♂ Mean.	σ	V.
O.O.L.	9	186·38	18	183·33	4	172·97	466	178·20 ±0·20	6·39 ±0·14	3·59 ±0·08
G.O.L.	9	188·34	18	186·08	4	173·25	467	180·54 ±0·20	6·34 ±0·14	3·51 ±0·11
G.B.	10	133·45	18	139·53	5	139·80	468	139·04 ±0·15	4·77 ±0·11	3·43 ±0·07
M.F.D.	9	97·06	18	96·14	5	94·00	467	96·56 ±0·16	5·00 ±0·11	5·18 ±0·11
Biz.B.	4	118·00	6	131·50	—	—	263	132·28 ±0·18	4·28 ±0·13	3·24 ±0·10
X.H.	7	49·29	18	50·78	4	46·50	461	52·08 ±0·08	2·51 ±0·06	4·82 ±0·11
X.B.	6	22·50	17	24·44	4	23·25	452	24·37 ±0·06	1·93 ±0·04	7·92 ±0·18
B.B.H.	4	133·87	18	134·31	1	130·00	461	135·62 ±0·16	4·97 ±0·11	3·66 ±0·08
B.X.I.	4	101·37	18	99·72	2	94·00	459	101·13 ±0·13	3·99 ±0·09	3·95 ±0·09
B.A.L.	4	95·12	17	95·30	—	—	392	96·27 ±0·15	4·42 ±0·11	4·59 ±0·11
U.F.H.	6	65·00	18	65·11	2	67·00	437	68·10 ±0·14	4·38 ±0·10	6·43 ±0·15
F.B.	6	96·67	11	92·81	3	91·00	420	94·62 ±0·18	5·51 ±0·13	5·82 ±0·14
O.B.L.	6	41·83	16	39·59	4	37·50	449	40·65 ±0·06	2·03 ±0·05	4·99 ±0·11
O.B.R.	6	41·25	15	39·80	3	36·77	458	41·17 ±0·06	2·05 ±0·05	4·98 ±0·11
O.H.L.	6	31·58	15	33·20	4	32·12	451	33·56 ±0·07	2·10 ±0·05	6·26 ±0·14
O.H.R.	6	31·67	14	32·85	3	30·38	456	33·34 ±0·07	2·12 ±0·05	6·36 ±0·14
P.L.	7	50·63	18	50·19	4	43·00	443	49·36 ±0·11	3·51 ±0·08	7·11 ±0·16
P.B.	8	32·25	16	36·75	3	34·66	447	36·19 ±0·10	3·14 ±0·07	8·66 ±0·20
C.I.	9	71·44	17	75·29	4	80·75	463	77·09 ±0·11	3·63 ±0·08	4·71 ±0·10
V.I.	4	71·24	16	72·25	—	—	461	75·17 ±0·11	3·52 ±0·08	4·68 ±0·09
U.F.I.	4	82·00	9	48·44	—	—	247	51·83 ±0·15	3·45 ±0·10	6·65 ±0·20
O.I.L.	6	76·00	15	83·67	—	—	451	82·27 ±0·19	5·95 ±0·13	7·23 ±0·16
O.I.R.	6	76·92	12	84·33	—	—	462	81·10 ±0·19	6·04 ±0·13	7·45 ±0·17
X.I.	8	47·17	17	48·18	4	50·25	448	46·94 ±0·13	4·14 ±0·09	8·82 ±0·20

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TABLE 1.—SKULL MEASUREMENTS—*continued.*

Character.	Malta Local Neolithic, Hypogæum, Hal Saflieni. ♂ No.	Malta Local Neolithic, Hypogæum, Hal Saflieni. ♂ Mean.	Bronze Age. ♂ No.	Bronze Age. ♂ Mean.	Romano-Maltese. ♂ + ♀ No.	Romano-Maltese. ♂ + ♀ Mean.	Mediæval, Chapel of Bones. ♂ No.	Mediæval, Chapel of Bones. ♂ Mean.	Mediæval, Chapel of Bones. ♂ σ	Mediæval, Chapel of Bones. ♂ V.
Cor.H.L.	11	59·32	2	54·50	7	69·00	317	67·19 ±0·23	5·94 ±0·16	8·85 ±0·24
Cor.H.R.							325	67·41 ±0·22	5·85 ±0·15	8·68 ±0·23
Con.H.L.	11	49·55	3	41·17	13	55·00	305	60·15 ±0·27	7·05 ±0·19	11·72 ±0·32
Con.H.R.							304	60·99 ±0·29	7·53 ±0·21	12·35 ±0·34
Sig.H.L.	13	42·65	3	36·83	10	47·75	340	49·51 ±0·21	5·62 ±0·15	11·35 ±0·30
Sig.H.R.							345	50·31 ±0·20	5·44 ±0·14	10·81 ±0·28
Symph.H.	7	30·07	5	28·10	11	30·00	334	30·30 ±0·14	3·74 ±0·10	12·34 ±0·33
Ramus R.							337	33·96 ±0·11	3·04 ±0·08	8·95 ±0·23
Ramus L.	16	34·57	3	34·00	—	—	345	33·73 ±0·11	3·10 ±0·08	9·20 ±0·24
Con.-Sym.L.	2	103·75	—	—	9	101·44	344	105·35 ±0·24	6·51 ±0·17	6·18 ±0·16
Bigon.B.	—	—	—	—	7	93·93	—	—	—	—
Bicond.B.	—	—	—	—	3	115·83	284	118·31 ±0·28	6·99 ±0·20	5·92 ±0·17
M.I.	—	—	—	—	3	89·97	283	88·96 ±0·28	6·91 ±0·20	7·76 ±0·22

3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

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Table I.—Skull Measurements—*continued.*

Character.	Valletta Modern. ♂ No.	Mean.	σ	V.	Valletta Modern. ♀ No.	Mean.
O.O.L.	39	176·43 ±0·72	5·84 ±0·51	3·31 ±0·28	9	164·00
G.O.L.	41	178·61 ±0·57	5·39 ±0·40	3·02 ±0·23	12	166·54
G.B.	42	141·42 ±0·60	5·79 ±0·43	4·10 ±0·30	12	137·63
M.F.D.	42	96·76 ±0·50	4·84 ±0·36	5·00 ±0·37	12	92·92
Biz.B.	38	130·23 ±0·54	4·90 ±0·38	3·76 ±0·29	11	124·41
N.H.	42	51·68 ±0·38	3·62 ±0·27	7·00 ±0·52	11	48·14
N.B.	42	23·50 ±0·17	1·63 ±0·12	6·94 ±0·51	11	24·82
B.B.H.	41	133·50 ±0·65	6·17 ±0·46	4·63 ±0·35	12	124·42
B.N.L.	41	100·02 ±0·60	5·70 ±0·42	5·70 ±0·43	12	94·42
B.A.L.	41	94·59 ±0·52	4·92 ±0·37	5·20 ±0·39	11	89·68
U.F.H.	42	66·58 ±0·43	4·16 ±0·31	6·24 ±0·46	12	60·17
F.B.	41	92·74 ±0·49	4·61 ±0·34	4·97 ±0·37	12	89·75
O.R.L.	31	39·13 ±0·21	1·75 ±0·15	4·46 ±0·38	8	38·06
O.B.R.	29	38·47 ±0·28	2·26 ±0·20	5·88 ±0·52	8	38·06
O.H.L.	31	32·66 ±0·39	3·20 ±0·27	9·81 ±0·85	8	35·25
O.H.R.	30	33·42 ±0·37	3·04 ±0·26	9·38 ±0·82	8	33·25
P.L.	30	48·03 ±0·42	3·45 ±0·30	7·19 ±0·63	8	45·50
P.B.	30	35·23 ±0·33	2·67 ±0·23	7·59 ±0·66	6	37·08
C.I.	41	79·01 ±0·39	3·67 ±0·27	4·64 ±0·35	12	82·71
V.I.	40	74·55 ±0·36	3·36 ±0·25	4·51 ±0·34	12	75·08
U.F.I.	38	50·92 ±0·38	3·43 ±0·27	6·74 ±0·52	11	48·55
O.I.L.	31	83·89 ±0·75	7·52 ±0·64	8·96 ±0·77	8	91·25
O.I.R.	29	85·01 ±0·98	7·82 ±0·69	9·20 ±0·82	8	88·75
N.I.	42	45·62 ±0·38	3·67 ±0·27	8·05 ±0·69	11	51·64
Cor.H.L.	—	—	—	—	—	—
Cor.H.R.	—	—	—	—	—	—
Con.H.L.	—	—	—	—	—	—
Con.H.R.	—	—	—	—	—	—
Sg.H.L.	—	—	—	—	—	—
Sg.H.R.	—	—	—	—	—	—
Symph.H.	—	—	—	—	—	—
Ramus R.	—	—	—	—	—	—
Ramus L.	—	—	—	—	—	—
Con.-Sym.L.	—	—	—	—	—	—
Bigon.B.	—	—	—	—	—	—
Bicond.B. ...	—	—	—	—	—	—
M.I.	—	—	—	—	—	—

Table II.—Adult ♂.

Character.	Malta. No.	Malta. Mean.	Malta. σ	Malta. V.	Gozo. No.	Gozo. Mean.	Gozo. σ	Gozo. V.
Stature	483	1651·18 ± 1·93	62·96 ± 1·37	3·81 ± 0·08	56	1657·86 ± 6·91	76·68 ± 4·89	4·63 ± 0·30
Sit.Ht.	342	869·43 ± 1·40	38·48 ± 1·00	4·43 ± 0·11	53	869·05 ± 3·66	39·48 ± 2·59	4·54 ± 0·30
C.O.L.	561	188·70 ± 0·19	6·63 ± 0·13	3·51 ± 0·07	82	185·38 ± 0·49	6·55 ± 0·34	3·53 ± 0·19
C.H.B.	562	152·29 ± 0·17	5·80 ± 0·12	3·81 ± 0·08	82	151·79 ± 0·44	5·91 ± 0·31	3·89 ± 0·21
M.F.D.	561	110·23 ± 0·16	5·66 ± 0·11	5·13 ± 0·10	82	108·18 ± 0·48	6·46 ± 0·34	5·97 ± 0·32
Biz.B.	560	139·14 ± 0·17	5·95 ± 0·12	4·28 ± 0·09	82	139·11 ± 0·46	6·12 ± 0·32	4·40 ± 0·23
Ext.Orb.B.	560	100·01 ± 0·15	5·42 ± 0·11	5·42 ± 0·11	82	96·91 ± 0·49	6·50 ± 0·35	6·80 ± 0·36
Big.B.	562	109·31 ± 0·19	6·53 ± 0·13	5·98 ± 0·12	82	107·21 ± 0·49	6·62 ± 0·35	6·17 ± 0·33
U.F.H.	555	64·82 ± 0·14	4·80 ± 0·10	7·41 ± 0·15	82	64·04 ± 0·35	4·66 ± 0·25	7·28 ± 0·39
T.F.H.	554	115·98 ± 0·21	7·40 ± 0·15	6·38 ± 0·13	77	114·94 ± 0·43	5·60 ± 0·30	4·87 ± 0·27
N.H.	560	48·79 ± 0·12	4·32 ± 0·09	8·85 ± 0·18	83	50·86 ± 0·36	4·83 ± 0·25	9·50 ± 0·50
N.B.	560	36·28 ± 0·09	3·24 ± 0·07	8·93 ± 0·18	83	37·05 ± 0·24	3·23 ± 0·17	8·72 ± 0·46
Int.Oc.B.	559	32·33 ± 0·09	3·15 ± 0·06	9·73 ± 0·20	—	—	—	—
C.I.	561	80·71 ± 0·10	3·44 ± 0·07	4·26 ± 0·09	81	82·00 ± 0·25	3·33 ± 0·18	4·06 ± 0·22
U.F.I.	554	46·59 ± 0·11	3·75 ± 0·08	8·04 ± 0·16	81	46·07 ± 0·23	3·01 ± 0·16	6·53 ± 0·35
T.F.I.	552	83·52 ± 0·15	5·38 ± 0·11	6·44 ± 0·13	76	82·54 ± 0·35	4·58 ± 0·25	5·55 ± 0·30
N.I.	559	75·26 ± 0·25	8·89 ± 0·18	11·81 ± 0·24	83	73·45 ± 0·62	8·48 ± 0·44	11·55 ± 0·61

TABLE II.—ADULT ♂—*continued.*

Character.	Urban Districts. No.	Mean.	σ	V.	Rural Districts. No.	Mean.	σ	V.
Stature	175	1647·77 ±3·39	70·40 ±2·54	4·27 ±0·15	151	1647·75 ±3·65	66·50 ±2·58	4·04 ±0·16
Sit. Ht.	166	867·80 ±2·13	40·72 ±1·51	4·69 ±0·17	122	877·91 ±2·22	36·40 ±1·57	4·15 ±0·18
G.O.L.	237	188·86 ±0·29	6·60 ±0·20	3·49 ±0·11	157	188·30 ±0·36	6·68 ±0·25	3·55 ±0·14
G.H.B.	238	152·92 ±0·23	5·23 ±0·16	3·42 ±0·11	157	152·63 ±0·32	6·01 ±0·23	3·93 ±0·15
M.F.D.	238	110·77 ±0·24	5·47 ±0·17	4·94 ±0·15	156	110·91 ±0·33	6·15 ±0·24	5·55 ±0·21
Bi.B.	236	139·53 ±0·25	5·77 ±0·18	4·14 ±0·13	157	139·97 ±0·32	5·94 ±0·23	4·24 ±0·16
Ext.Orb.B.	236	99·87 ±0·23	5·18 ±0·16	5·18 ±0·16	157	99·33 ±0·28	5·22 ±0·20	5·26 ±0·20
Big.B.	238	110·02 ±0·30	6·77 ±0·21	6·15 ±0·19	157	110·16 ±0·34	6·28 ±0·24	5·70 ±0·22
U.F.H.	232	65·41 ±0·23	5·23 ±0·16	8·00 ±0·25	156	65·01 ±0·24	4·39 ±0·17	6·75 ±0·26
T.F.H.	232	116·66 ±0·34	7·72 ±0·24	6·62 ±0·21	155	116·75 ±0·39	7·18 ±0·28	6·15 ±0·24
N.H.	236	49·32 ±0·19	4·28 ±0·13	8·67 ±0·27	157	48·34 ±0·21	3·90 ±0·15	8·08 ±0·31
N.B.	237	36·39 ±0·14	3·29 ±0·10	9·04 ±0·28	157	36·15 ±0·17	3·14 ±0·12	8·70 ±0·33
Int.Oc.B.	236	32·93 ±0·14	3·27 ±0·10	9·94 ±0·31	157	32·62 ±0·15	2·83 ±0·11	8·69 ±0·33
C.I.	237	80·97 ±0·15	3·51 ±0·11	4·33 ±0·13	157	81·20 ±0·19	3·58 ±0·14	4·41 ±0·17
U.F.I.	231	46·00 ±0·17	3·78 ±0·12	8·22 ±0·26	156	46·26 ±0·18	3·40 ±0·13	7·36 ±0·28
T.F.I.	230	83·76 ±0·24	5·43 ±0·17	6·49 ±0·20	155	83·72 ±0·27	5·05 ±0·19	6·04 ±0·23
N.I.	236	73·03 ±0·39	8·85 ±0·27	12·11 ±0·38	157	75·20 ±0·47	8·64 ±0·33	11·48 ±0·44

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3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

TABLE II.—ADULT ♂—*continued.*

Character.	Siggewi.				Zurrico.			
	No.	Mean.	σ	V.	No.	Mean.	σ	V.
Stature	74	1655·41 ± 4·39	55·94 ±	3·38 ± 0·19	83	1660·85 ± 3·41	46·04 ± 2·41	2·77 ± 0·15
Sit.Ht.	—	—	—	—	54	860·00 ± 2·95	32·18 ± 2·09	3·74 ± 0·24
C.O.L.	80	189·08 ± 0·48	6·33 ± 0·34	3·35 ± 0·18	87	188·83 ± 0·47	6·51 ± 0·33	3·45 ± 0·18
G.H.B.	80	152·17 ± 0·42	5·59 ± 0·30	3·67 ± 0·20	87	150·30 ± 0·39	5·38 ± 0·28	3·58 ± 0·18
M.F.D.	80	107·45 ± 0·41	5·49 ± 0·29	5·11 ± 0·27	87	110·21 ± 0·29	3·97 ± 0·20	3·62 ± 0·19
Biz.B.	80	137·98 ± 0·44	5·81 ± 0·31	4·21 ± 0·22	87	137·68 ± 0·44	6·15 ± 0·31	4·47 ± 0·23
Ext.Orb.B.	80	99·15 ± 0·41	5·38 ± 0·29	5·43 ± 0·29	87	101·16 ± 0·47	6·45 ± 0·33	6·38 ± 0·33
Big.B.	80	108·17 ± 0·35	6·52 ± 0·40	6·03 ± 0·38	87	108·90 ± 0·41	5·72 ± 0·29	5·25 ± 0·27
U.F.H.	80	64·30 ± 0·36	4·71 ± 0·25	7·33 ± 0·39	87	63·18 ± 0·31	4·22 ± 0·22	6·68 ± 0·34
T.F.H.	80	114·40 ± 0·57	7·50 ± 0·40	6·56 ± 0·35	87	114·19 ± 0·46	6·31 ± 0·32	5·52 ± 0·28
N.H.	80	49·05 ± 0·31	4·09 ± 0·22	8·34 ± 0·45	87	46·55 ± 0·35	4·82 ± 0·25	10·36 ± 0·54
N.B.	79	37·56 ± 0·24	3·13 ± 0·17	8·33 ± 0·45	87	35·05 ± 0·21	2·89 ± 0·15	8·24 ± 0·42
Int.Oc.B.	79	30·91 ± 0·27	3·51 ± 0·19	11·47 ± 0·62	87	31·29 ± 0·18	2·51 ± 0·13	8·02 ± 0·41
C.I.	80	80·69 ± 0·22	2·95 ± 0·16	3·66 ± 0·20	87	79·78 ± 0·25	3·51 ± 0·18	4·40 ± 0·23
U.F.I.	80	46·61 ± 0·27	3·63 ± 0·19	7·79 ± 0·42	87	45·92 ± 0·24	3·34 ± 0·17	7·27 ± 0·37
T.F.I.	80	82·95 ± 0·45	5·96 ± 0·32	7·19 ± 0·39	87	83·03 ± 0·36	5·00 ± 0·26	6·02 ± 0·31
N.I.	79	77·47 ± 0·63	8·26 ± 0·44	10·66 ± 0·58	87	75·92 ± 0·68	9·36 ± 0·48	12·33 ± 0·64

TABLE III.—ADULT ♀.

Character.	Malta. No.	Malta. Mean.	Malta. σ	Malta. V.	Gozo. No.	Gozo. Mean.	Gozo. σ	Gozo. V.
Stature	220	1500·03 ± 2·77	61·02 ± 1·96	4·05 ± 0·13	49	1518·57 ± 6·07	62·96 ± 4·29	4·15 ± 0·27
Sit.Ht.	182	813·02 ± 2·39	47·94 ± 1·69	5·90 ± 0·21	30	803·30 ± 5·42	44·03 ± 3·83	5·48 ± 0·48
G.O.L.	330	177·40 ± 0·23	6·11 ± 0·16	3·44 ± 0·09	51	176·05 ± 0·50	6·20 ± 0·41	3·50 ± 0·23
G.H.B.	329	144·62 ± 0·20	5·41 ± 0·14	3·74 ± 0·10	51	144·47 ± 0·36	3·84 ± 0·26	2·66 ± 0·18
M.F.D.	326	102·14 ± 0·20	5·30 ± 0·14	5·19 ± 0·14	51	101·75 ± 0·44	4·70 ± 0·31	4·62 ± 0·31
Bic.B.	327	127·15 ± 0·18	4·92 ± 0·13	3·87 ± 0·10	51	129·27 ± 0·42	4·46 ± 0·30	3·45 ± 0·23
Ext.Orb.B.	326	92·04 ± 0·20	7·90 ± 0·21	8·59 ± 0·23	51	88·58 ± 0·61	6·44 ± 0·43	7·27 ± 0·49
Big.B.	326	98·14 ± 0·20	5·40 ± 0·14	5·50 ± 0·15	51	97·47 ± 0·42	4·34 ± 0·29	4·45 ± 0·30
U.F.H.	326	62·30 ± 0·22	4·80 ± 0·15	7·70 ± 0·20	51	63·32 ± 0·46	4·92 ± 0·33	7·77 ± 0·52
T.F.H.	304	106·77 ± 0·25	6·55 ± 0·18	6·14 ± 0·17	47	108·27 ± 0·55	5·61 ± 0·39	5·18 ± 0·36
N.H.	330	49·32 ± 0·18	4·85 ± 0·13	9·83 ± 0·26	51	50·45 ± 0·38	4·05 ± 0·27	8·03 ± 0·54
N.B.	326	32·62 ± 0·11	2·95 ± 0·08	9·03 ± 0·24	51	33·43 ± 0·33	3·45 ± 0·23	10·32 ± 0·70
Int.Oc.B.	325	27·85 ± 0·11	3·07 ± 0·08	11·03 ± 0·30	51	26·39 ± 0·25	2·68 ± 0·18	10·16 ± 0·69
C.I.	329	81·55 ± 0·12	3·34 ± 0·09	4·10 ± 0·11	51	82·37 ± 0·32	3·36 ± 0·22	4·08 ± 0·27
U.F.I.	329	49·06 ± 0·15	4·05 ± 0·11	8·26 ± 0·22	51	49·32 ± 0·41	4·30 ± 0·29	8·68 ± 0·58
T.F.I.	303	84·25 ± 0·23	5·91 ± 0·16	7·02 ± 0·19	47	84·24 ± 0·47	4·82 ± 0·34	5·72 ± 0·40
X.I.	325	66·76 ± 0·33	8·81 ± 0·23	13·21 ± 0·36	51	66·60 ± 0·77	8·14 ± 0·54	1·22 ± 0·83

TABLE III.—ADULT ♀—*continued.*

Character.	Urban Districts. No.	Mean.	σ	V.	Rural Districts. No.	Mean.	σ	V.
Stature	111	1509·66 ±3·92	61·24 ±2·77	4·06 ±0·18	99	1503·03 ±4·37	64·41 ±3·09	4·29 ±0·21
Sit.Ht.	108	804·25 ±2·42	37·33 ±1·71	4·64 ±0·21	74	828·58 ±3·78	48·22 ±2·67	5·82 ±0·32
C.O.L.	184	177·29 ±0·30	6·10 ±0·21	3·44 ±0·12	146	177·49 ±0·34	6·03 ±0·24	3·40 ±0·14
C.H.B.	183	145·09 ±0·27	5·49 ±0·19	3·78 ±0·13	146	144·03 ±0·29	5·23 ±0·21	3·64 ±0·14
M.F.D.	182	102·36 ±0·26	5·14 ±0·18	5·02 ±0·18	144	101·83 ±0·31	5·50 ±0·22	5·40 ±0·22
Biz.B.	183	127·82 ±0·25	4·99 ±0·18	3·91 ±0·14	144	126·38 ±0·26	4·61 ±0·18	3·65 ±0·14
Ext.Orb.B.	183	93·82 ±0·30	7·83 ±0·28	8·35 ±0·30	145	89·83 ±0·41	7·34 ±0·29	8·12 ±0·32
Big.B.	184	98·64 ±0·27	5·44 ±0·19	5·52 ±0·19	142	97·50 ±0·31	5·45 ±0·22	5·59 ±0·22
U.F.H.	182	61·51 ±0·23	4·50 ±0·16	7·31 ±0·26	144	62·89 ±0·27	4·86 ±0·19	7·73 ±0·31
T.F.H.	168	106·21 ±0·36	6·86 ±0·25	6·46 ±0·24	136	107·51 ±0·34	5·81 ±0·24	5·40 ±0·22
N.H.	184	48·58 ±0·24	4·81 ±0·17	9·91 ±0·35	146	50·07 ±0·27	4·76 ±0·19	9·50 ±0·38
N.B.	183	32·17 ±0·15	3·02 ±0·11	9·38 ±0·33	143	32·72 ±0·16	2·82 ±0·11	8·60 ±0·35
Ist.Oc.B.	182	27·96 ±0·17	3·31 ±0·12	11·98 ±0·48	143	27·73 ±0·17	2·98 ±0·12	10·74 ±0·43
C.I.	183	81·83 ±0·17	3·32 ±0·12	4·05 ±0·14	146	81·16 ±0·18	3·25 ±0·13	4·00 ±0·16
U.F.I.	184	48·54 ±0·20	3·97 ±0·14	8·19 ±0·29	145	49·06 ±0·24	4·28 ±0·17	8·57 ±0·34
T.F.I.	168	83·33 ±0·30	5·84 ±0·21	7·01 ±0·26	135	85·24 ±0·34	5·88 ±0·24	6·90 ±0·28
N.I.	183	67·36 ±0·42	8·40 ±0·30	12·48 ±0·45	142	65·96 ±0·52	9·16 ±0·37	13·89 ±0·57

3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

Table IV.—Significant Differences. Crania.

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Mediæval Chapel of Bones and Modern Valletta.

Character.	Means.		Variations.	
	A_{c-v}	$\frac{\Delta}{\epsilon_\Delta}$	$V_v - V_c$	$\frac{\Delta}{\epsilon_\Delta}$
O.O.L.	—	—	—	—
G.O.L.	1·93 ±0·63	3·06	—	—
G.B.	—	—	—	—
M.F.D.	—	—	—	—
Bi.B.	2·06 ±0·58	3·56	—	—
X.H.	—	—	2·18 ±0·53	4·10
X.B.	0·87 ±0·18	4·83	—	—
B.B.H.	2·12 ±0·45	6·69	—	—
B.N.	—	—	1·75 ±0·44	3·98
B.A.	1·68 ±0·54	3·10	—	—
U.F.H.	1·52 ±0·45	3·36	—	—
F.B.	1·88 ±0·52	3·60	—	—
O.B.L.	1·52 ±0·22	6·96	—	—
O.B.R.	2·70 ±0·29	9·43	—	—
O.H.L.	—	—	3·55 ±0·86	4·13
O.H.R.	—	—	3·02 ±0·83	3·63
P.L.	1·33 ±0·43	3·06	—	—
P.B.	—	—	—	—
C.I.	−1·92 ±0·41	4·73	—	—
V.I.	—	—	—	—
U.F.I.	—	—	—	—
O.I.L.	—	—	—	—
O.I.R.	—	—	—	—
X.I.	1·32 ±0·40	3·29	—	—

TABLE V.—SIGNIFICANT DIFFERENCES. LIVING.

Means ♂.

Character.	Malta and Gozo.		Urban District and Rural District.		Urban District and Siggewe.		Urban District and Zurrico.		Zurrico and Siggewe.	
	Δ_{a-c}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-s}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-s}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-z}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{s-z}	$\frac{\Delta}{\sigma_\Delta}$
G.O.L.	3·32 ±0·53	6·26	None.	—	None.	—	None.	—	None.	—
H.B.	None.	—	,,	—	,,	—	2·62 ±0·45	5·79	1·87 ±0·57	3·26
M.F.D.	2·05 ±0·51	4·02	,,	—	3·32 ±0·48	6·99	None.	—	−2·76 ±0·50	5·50
Biz.B.	None.	—	,,	—	1·55 ±0·51	3·06	1·85 ±0·51	3·66	None.	—
Ext.Orb.B. ...	3·10 ±0·51	6·05	,,	—	None.	—	None.	—	2·01 ±0·62	3·22
Big.B.	2·10 ±0·53	3·99	,,	—	−1·85 ±0·46	4·01	,,	—	None.	—
U.F.H.	None.	—	,,	—	None.	—	2·23 ±0·39	5·78	,,	—
T.F.H.	,,	—	,,	—	2·26 ±0·66	3·41	2·47 ±0·57	4·31	,,	—
N.H.	2·07 ±0·38	5·45	0·98—0·28	3·46	None.	—	2·77 ±0·40	6·96	2·50 ±0·47	5·35
X.B.	−0·77 ±0·26	3·00	None.	—	1·17 ±0·28	4·21	1·34 ±0·25	5·31	2·51 ±0·32	7·87
Int.Or.B.	?	—	,,	—	2·02 ±0·30	6·65	1·64 ±0·23	7·19	None.	—
C.I.	1·29 ±0·27	4·78	None.	—	None.	—	1·19 ±0·31	3·86	None.	—
U.F.I.	None.	—	,,	—	,,	—	None.	—	,,	—
T.F.I.	,,	—	,,	—	,,	—	,,	—	,,	—
N.I.	,,	—	2·17—0·61	3·55	4·44 ±0·74	5·99	,,	—	,,	—

SIGNIFICANT DIFFERENCES.

Variations ♂.

Character.	Malta and Gozo.		Urban District and Rural District.		Urban District and Siggewe.		Urban District and Zurrico.		Zurrico and Siggewe.	
	Δ_{a-c}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-s}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-s}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-z}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{s-z}	$\frac{\Delta}{\sigma_\Delta}$
M.F.D.	—	—	—	—	—	—	1·93 ±0·28	6·82	1·49 ±0·33	4·51
E.O.B.	1·38 ±0·38	3·67	—	—	—	—	—	—	—	—
U.F.H.	—	—	1·25 ±0·36	3·47	—	—	—	—	—	—
T.F.H.	1·51 ±0·30	5·04	—	—	—	—	—	—	—	—
N.H.	—	—	—	—	—	—	2·28 ±0·62	3·68	—	—

TABLE V.—SIGNIFICANT DIFFERENCES. LIVING—*continued.*

Character.	Means ♀.				Variations.					
	Malta and Gozo.		Urban District and Rural District.		Malta. ♀ and ♂.		Malta and Gozo ♀.		Urban District and Rural District ♀.	
	Δ_{a-a}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-z}	$\frac{\Delta}{\sigma_\Delta}$	$\Delta_{\sigma-\varphi}$	$\frac{\Delta}{\sigma_\Delta}$	Δ_{a-a}	$\frac{\Delta}{\sigma_\Delta}$	Δ_{c-z}	$\frac{\Delta}{\sigma_\Delta}$
G.O.I.	None.	—	None.	—	None.	—	None.	—	None.	—
H.B.	„	—	„	—	„	—	1·08 ±0·21	5·25		
M.F.D.	„	—	„	—	„	—	None.	—		
Biz.B.	2·12 ±0·46	4·64	1·44 ±0·36	3·99	0·41 ±0·13	3·15	„	—		
E.O.B.	3·86 ±0·68	5·12	3·99 ±0·57	7·05	−3·17 ±0·26	12·43	„	—		
Biz.B.	None.	—	None.	—	None.	—	1·05 ±0·34	3·13		
U.F.H.	„	—	−1·38 ±0·35	3·89	„	—	None.	—		
T.F.H.	„	—	None.	—	„	—	„	—		
X.H.	„	—	−1·49 ±0·36	4·12	−0·98 ±0·32	3·10	1·80 ±0·60	3·00		
X.B.	„	—	None.	—	None.	—	None.	—		
I.O.B.	1·86 ±0·27	5·35	„	—	(?)	—	„	—		
C.I. ...	None.	—	None.	—	−0·41 ±0·12	3·42	None.	—	None	—
U.F.I.	„	—	−1·42 ±0·31	4·55	None.	—	„	—	„	—
T.F.I.	„	—	−1·91 ±0·45	4·21	„	—	„	—	„	—
X.I.	„	—	None.	—	„	—	„	—	„	—

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TABLE V.—SIGNIFICANT DIFFERENCES. LIVING—*continued.*

Means ♂ and ♀ (Indices).			Coefficients of Correlation.		
Malta.			Malta.		
Character.	$\Delta_{\sigma-\varphi}$	$\frac{\Delta}{\epsilon_\Delta}$	Character.	$\Delta_{\sigma-\varphi}$	$\frac{\Delta}{\epsilon_\Delta}$
			T.F.H. and Biz.B. ...	0·25 ± 0·08	3·28
C.I.	−0·84 ± 0·16	5·38			
U.F.I.	−2·49 ± 0·19	13·39		Urban and Rural Districts ♀.	
T.F.I.	—	—	T.F.H. and Biz.B. ...	0·29 ± 0·08	3·74
N.I.	−0·85 ± 0·13	6·49	N.H. and N.B.	0·35 ± 0·07	4·74
				Urban Districts and Siggewe ♂.	
			G.O.L. and G.B. ...	−0·24 ± 0·07	3·37

3: Buxton D-5 (1920-1921) 1922 EZ6 Malta EZ6

Table VI.—Coefficients of Correlation.

Living ♂.

Character.	Malta.	Gozo.	Urban Districts.	Rural Districts.	Siggewe.	Zurrico.
G.O.L. and G.B.	0·325 ±0·025	0·405 ±0·063	0·215 ±0·042	0·319 ±0·048	0·459 ±0·059	0·217 ±0·069
U.F.H. and Biz.B.	0·135 ±0·028	0·308 ±0·068	0·205 ±0·043	0·176 ±0·052	0·175 ±0·073	0·197 ±0·069
T.F.H. and Biz.B.	0·321 ±0·026	0·287 ±0·071	0·344 ±0·039	0·370 ±0·047	0·164 ±0·073	0·288 ±0·066
N.H. and N.B.	0·111 ±0·028	0·199 ±0·071	0·065 ±0·044	0·065 ±0·054	0·193 ±0·073	0·136 ±0·071

Living ♀.

G.O.L. and G.B.	0·350 ±0·033	0·144 ±0·093	0·375 ±0·043	0·356 ±0·049	—	—
U.F.H. and Biz.B.	0·101 ±0·037	−0·057 ±0·094	0·064 ±0·050	−0·007 ±0·056	—	—
T.F.H. and Biz.B.	0·074 ±0·039	0·168 ±0·096	0·156 ±0·051	−0·130 ±0·057	—	—
N.H. and N.B.	0·021 ±0·037	0·131 ±0·093	0·164 ±0·049	−0·182 ±0·055	—	—

Skulls ♂.

Character.	Mediæval Chapel of Bones.	Modern Valletta.
G.O.L. and G.B.	0·079 ±0·031	0·173 ±0·102
H.L. and B.R.	0·149 ±0·031	0·366 ±0·092
U.F.H. and Biz.B.	0·183 ±0·042	0·163 ±0·106
O.B. & O.H.L.	0·189 ±0·031	0·410 ±0·091
O.B. and O.H.R.	0·154 ±0·031	0·344 ±0·111
N.H. and N.B.	0·107 ±0·032	0·653 ±0·060
C.S. and Bic.L.	0·178 ±0·039	—

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Table VII.—Pigmentation.

Hair Colour.

Absolute Figures.

Hair Colour.	♂						♀			
	U.D.	R.D.	Sig.	Zur.	Malta.	Gozo.	U.D.	R.D.	Malta.	Gozo.
Black	150	99	51	30	330	56	107	102	209	38
Brown	65	44	27	56	192	24	64	38	102	13
Fair	2	1	1	1	5	1	3	—	3	—
Total ...	217	144	79	87	527	81	174	140	314	51

Percentages.

Hair Colour.	♂						♀			
	U.D.	R.D.	Sig.	Zur.	Malta.	Gozo.	U.D.	R.D.	Malta.	Gozo.
Black	69·1	68·8	64·5	34·5	62·6	69·1	61·5	72·8	66·5	74·5
Brown	30·0	30·5	34·2	64·4	36·5	29·7	36·8	27·2	32·5	25·5
Fair	0·9	0·7	1·3	1·1	0·9	1·2	1·7	—	1·0	—
Total ...	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

Eye Colour.

Absolute Figures.

Eye Colour.	♂						♀			
	U.D.	R.D.	Sig.	Zur.	Malta.	Gozo.	U.D.	R.D.	Malta.	Gozo.
Brown	121	82	37	58	298	58	136	109	245	38
Intermediate ...	71	41	34	16	162	15	32	24	56	6
Blue	43	31	8	13	95	8	15	12	27	7
Total ...	235	154	79	87	555	81	183	145	328	51

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Table VII.—Pigmentation—*continued.*

Eye Colour.	Percentages.									
	♂						♂			
	U.D.	R.D.	Sig.	Zur.	Malta.	Gozo.	U.D.	R.D.	Malta.	Gozo.
Brown	51·5	53·3	46·9	66·6	57·7	71·6	74·3	75·2	74·7	74·5
Intermediate ...	30·2	26·6	43·0	18·4	29·2	18·5	17·5	16·5	17·1	11·8
Blue	18·3	20·1	10·1	15·0	17·1	9·9	8·2	8·3	8·2	13·7
Total ...	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0